Revisiting Entrepreneurial Orientation and its Contributions to Business Performance: An Industry Type Comparison employing Computer-Aided Text Analysis under Consideration of Configurational, Contingency, Environmental, and Temporal Aspects

FRANZ, BENJAMIN

Revisiting Entrepreneurial Orientation and its Contributions to Business Performance: An Industry Type Comparison employing Computer-Aided Text Analysis under Consideration of Configurational, Contingency, Environmental, and Temporal Aspects

Durham University
Business School

A Thesis Submitted in Fulfilment of the Requirements for the Degree of

Doctor of Philosophy

Programme: PhD Management

Department: Durham University Business School

Faculty: Social Sciences and Health

BENJAMIN FRANZ

2019

ABSTRACT

A firm's entrepreneurial orientation (EO) refers to a firm-level strategic orientation that reflects its strategic choices, managerial styles, and organisational behaviours that are entrepreneurial in their basis. The majority of previous studies on a firm's EO investigate its three most common characteristics – innovativeness, risk-taking, and proactiveness – attempting to measure and analyse their effects on business performance on a unidimensional basis while claiming a generally and overall positive impact. However, this approach is different from Lumpkin and Dess' (1996) superior development of the conceptualisation of EO as being driven by five (not three) dimensions (they added autonomy and competitive aggressiveness). These five dimensions were conceived to vary on an independent basis, each potentially relating differently to various firm performance measures (such as sales growth, gross-profit-margin, market share, and return on assets), while being determined by both internal and external factors. Consequently, even though Lumpkin and Dess' (1996) EO theory has rarely been previously considered empirically in the literature on the subject, it has presented a more plausible development of the conceptualisation of EO, making it highly relevant to the current entrepreneurial research. Therefore, this thesis employs the five-dimensional approach with the aim to investigate four research questions: (1) whether and how a firm can achieve an ideal profile of EO dimensions and the manner in which this fit may vary across industrial contexts, (2) whether and which dimensions may be more beneficial towards the contingency of firm performance as opposed to their counterparts when considering factors such as different industry types (high-tech versus less-tech intensive firms) as well as (3) environmental conditions (industry turbulence and munificence), and, ultimately, (4) whether the effects of EO may last longer than their initial investment period.

In brief, the proposed hypotheses were tested across a sample of US companies drawn from the Standard & Poor 500 that were selected to provide a relatively equal representation of high-technology and less-technology intensive companies, as determined by their industry

types. This study pioneers a new research approach by examining the levels of the five EO dimensions through computer-aided text analysis along with a set of keywords advanced from Short et al.'s (2009) paper to extract values from the letters to shareholders and 10-K filings in the firms' annual reports. Performance indicators and information related to the moderator and control variables were sourced from COMPUSTAT.

In describing an EO's contextuality regarding configurational, contingency, environmental, and temporal aspects, this thesis contributes to the current knowledge of EO in the following ways.

Firstly, relating to research question 1, this study found that EO is associated with high performance in the set of ideal profile firms whereas deviance is associated with mediocre outcomes in the remaining group. Inconsistencies in the EO-performance linkage, therefore, are perceived to be driven by a poorer configuration of the EO multi-dimensions. Furthermore, it was examined to what extent the configuration associated with optimal performance remains the same across both the industry types. Herein, it was discovered that the ideal profiles do not differ across the two industry types of high-tech and less-tech.

Secondly, relating to research question 2, within the context of this study, it was discovered that EO is, in fact, to be conceived as a multi-dimensional construct comprising of five dimensions as each has either a positive or a negative impact on individual performance measures (here under consideration of the contingency approach). However, such a linkage generally does not differ with respect to the industry types of high-tech and less-tech (except for two dimensions related to the market share measure).

Thirdly, pertaining to research question 3, it was discovered that industry turbulence regarding employee stability positively moderates the EO-performance linkage for the performance indicator of market share. In contrast, for industry munificence, characterised by employee growth, a negatively moderating effect on the EO-performance relationship was observed for the same performance indicator. Thus, both employee variables are considered as central environmental influencers towards the EO-firm performance linkage regarding market share. Even so, with respect to the remaining studied performance indicators, no such effect was observed.

Lastly, relating to research question 4, innovativeness was the sole dimension that positively affected the performance indicator of gross-profit-margin over a period of two years. Moreover, an adverse effect for risk-taking on return on assets was also found over the same time-span. As a consequence, EO, when considering the nuanced research within this thesis (cross-sectional of firms and/or industry types and conditions), was neither linked with generally positive nor superior firm performance as has been assumed across earlier studies but was instead associated with varying levels of the EO-performance linkage over time.

Implications for scholarship, firms and top-level managers, limitations of this study, as well as recommendations and directions for future EO-based research close the work.

TABLE OF CONTENTS

TITLE PAGE i

ABSTRACT ii

TABLE OF CONTENTS v

LIST OF TABLES xv

LIST OF FIGURES xix

LIST OF ABBREVIATIONS USED IN THE MANUSCRIPT xxi

STATEMENT OF COPYRIGHT xxiii

ACKNOWLEDGEMENTS xxiv

CHAPTER 1: INTRODUCTION 1

1.1. Background of this Study and Emerging Gaps 2

1.2. Aims, Objectives, and Research Questions 6

1.3. Research Philosophy, Design, and Methodological Approach 7

1.4. Major Contributions 8

1.5. Structure of this Thesis 10

CHAPTER 2: LITERATURE REVIEW 12

2.1. Previous Definitions of Entrepreneurial Activities within Firms and the Manifestation of Entrepreneurial Orientation 12

2.2. EO Conceptualisation 16

2.2.1. Unidimensional versus Multidimensional Perspectives of EO 17

2.2.2. EO Impact on Performance 18

2.2.3. Vertical Dimensionality – A Firm-Level Perspective 19

2.2.4. Horizontal Dimensionality 20

2.2.5. Temporal Dimensionality 21

2.3. The Unidimensional versus Multidimensional Perspective 22
2.3.1. Innovativeness 26
2.3.2. Risk-Taking 28
2.3.3. Proactiveness 30
2.3.4. Autonomy 31
2.3.5. Competitive Aggressiveness 33
2.4. EO and its Impact on Firm Performance – A Deeper Understanding 35
2.4.1. Recent Knowledge on the Multidimensional Linkage between EO, its Dimensions and Firm Performance 46
2.4.2. Contextual and Industrial Characteristics 49
2.4.2.1. The Importance of Contextual and Industry Characteristics 49
2.4.2.2. Industry Types and Lifecycle Stages 50
2.4.2.3. Industry Conditions 51
2.4.3. Considerations that Might Cause Deviance in the EO-Performance Relationship 55
2.4.3.1. Considerations When Measuring EO 55
2.4.3.2. Considerations When Measuring Performance 56
2.4.3.3. Considerations of Context and Additional Dimensional Measurements 58
2.5. Vertical Dimensionality: EO Variance across Organisational Hierarchical Levels 59
2.5.1. Vertical Variation of EO: Top-Level Managers 59
2.5.2. Vertical Variation of EO: Mid-Level Managers 60
2.5.3. Vertical Variation of EO: Non-Managerial Employees 63
2.6. Horizontal Dimensionality: EO Variance across Organisational Divisions/Areas 64
2.6.1. Horizontal Variation of EO: Structure 65
2.6.2. Horizontal Variation of EO: Strategic Fit 65
2.6.3. Horizontal Variation of EO: Job Design 66

2.7. Temporal Dimensionality: EO Variation across Time and State of Development... 68

2.8. Stabilisation of Theorising in EO Research ... 72

2.9. Alternative Contingency Theories Considering an EO's Dimensionality ... 76

2.10. Summary of Current Gaps in Literature ... 80

2.10.1. Research Gaps ... 80

2.10.2. Selection of Urgent Research Gaps, Research Questions, and Literature Review Closure ... 88

CHAPTER 3: THEORETICAL FRAMEWORK AND HYPOTHESES ... 90

3.1. Theoretical Framework Development and Conceptual Agreement ... 90

3.1.1. Contingency and Configurational Theory ... 90

3.1.2. Conceptual Agreement on the EO Framework ... 98

3.2. Hypotheses ... 101

3.2.1. Targeting RQ1: The Ideal Profile Configuration of the EO Multi-Dimensions under Consideration of Industry Types of HT and LT ... 102

3.2.2. Targeting RQ2: The Relationship of the Five Multi-Dimensions with Performance Moderated by Industry Types ... 104

3.2.3. Targeting RQ3: The Relationship of the EO Dimensions with Performance Moderated by Industry Conditions ... 112

3.2.4. Targeting RQ4: The Relationship of the EO Dimensions with Performance under Temporal Considerations ... 114

CHAPTER 4: RESEARCH PHILOSOPHY, DESIGN, AND METHODOLOGY ... 118

4.1. Research Philosophy, Design, and Methodology Outlook ... 118

4.1.1. Research Philosophical Position ... 118

4.1.2. Research Design and Methodology ... 120

4.2. Sample Selection and Classification ... 123

4.2.1. Classification of Industry Sectors and Types ... 124

4.2.2. Classification of Firm Groups and Sample Criterion 1 and 2 132
4.2.3. Manual Adjustment 1: Missing NAICS Codes of Firms 132
4.2.4. Manual Adjustment 2: Firms expected to be HT 133
4.2.5. Manual Adjustment 3: Final List 133
4.2.6. Inter-Rater Reliability 133
4.3. Measurement Implications for the Defined Research Variables 136
4.3.1. Measurement Implications: EO 136
4.3.2. Measurement Implications: Performance 136
4.3.3. Measurement Implications: Industry Types 137
4.3.4. Measurement Implications: Industry Conditions 137
4.3.5. Measurement Implications: Temporal Dimensionality 138
4.3.6. Definition of Control Variables 138
4.4. Data Collection 139
4.4.1. Data Collection: EO Considerations 139
4.4.2. Data Collection: Performance Considerations, Industry Types and Conditions 141
4.4.2.1. Performance Considerations 142
4.4.2.2. Industry Types 144
4.4.2.3. Industry Conditions 144
4.4.3. Overview of the Data Collected by Year 145
4.5. Data Validity and Reliability of the EO Measure 149
4.5.1. Data Validity (Deductive and Inductive Content) 151
4.5.2. External Validity 159
4.5.3. Data Reliability 160
4.6. Ethical Considerations 160

CHAPTER 5: ANALYSIS AND RESULTS 162
5.1. Initial CATA Analysis to Quantify the EO Dimensions 162
5.2. Examining RQ1: Ideal Profiles of the EO Dimensions of Firms in High-Tech versus Less-Tech Industries 164
5.2.1. H1: Configurations of EO Dimensions Associated with Best-performing Firms are not the same Across the Two Industry Types 164
5.2.1.1. Analysis and Results (A) Targeting H1: Construct Means, Standard Deviations, and Correlations by Industry Type and Sample Source 169
5.2.1.2. Analysis and Results (B) Targeting H1: ANOVA LTS versus 10-K & further Correlations among Study Variables of LTS versus 10-K 172
5.2.1.3. Analysis and Results (C) Targeting H1: ANOVA 10% HT versus 10% LT... 177
5.2.2. H2: Deviation from an Ideal Profile of EO Dimensions is Negatively Related to Firm Performance 178
5.2.2.1. Analysis and Results (A) Targeting H2: Construct Means, Standard Deviation, and t Test by Performance and Sample Source 179
5.2.2.2. Analysis and Results (B) Targeting H2: (Ideal) Profile Configuration Scores in LTS/10-K by Performance 184
5.2.2.3. Analysis and Results (C) Targeting H2: Regression Models for EO fit with Performance HT versus LT incl. T10% versus P10% 190
5.2.3. H1-H2: Results Summary 195
5.3. Examining RQ2: The Relationship of the Five Multi-Dimensions with Performance Moderated by Industry Types 195
5.3.1. H3-H7: Initial Tests and Corrections of the Data 197
5.3.1.1. Analysis and Results (A) Targeting H3-H7: Early Descriptive Statistics: General Overview of Variables 198
5.3.1.2. Analysis and Results (B) Targeting H3-H7: Descriptive Statistics: Non-transformed versus Transformed Variables 204
5.3.1.3. Analysis and Results (C) Targeting H3-H7: ANOVA Comparing EO Dimension Means for HT versus LT Group 212

5.3.1.4. Analysis and Results (D) Targeting H3-H7: EO-dimensional Cluster Analysis to Test for Outliers 214

5.3.2. Analysis and Results (E) Targeting H3-H7: Statistics: Interaction Terms Regression Analysis 220

5.3.2.1. Statistics: Interaction Terms Regression Analysis Model 1 (Control Variables and Dummy Variable) 235

5.3.2.2. Statistics: Interaction Terms Regression Analysis Model 2 (Adding Independent Variables) 237

5.3.2.3. Statistics: Interaction Terms Regression Analysis Model 3 (Adding Interaction Terms) 239

5.3.3. H3-H7: Results Summary 242

5.3.3.1. H3: Firm Innovativeness is more Strongly (Positively) Related to Business Performance in High-tech than in Less-tech Industries 242

5.3.3.2. H4: Firm Risk-Taking is more Strongly (Positively) Related to Business Performance in High-tech than in Less-tech Industries 244

5.3.3.3. H5: Firm Proactiveness is more Strongly (Positively) Related to Business Performance in High-tech than in Less-tech Industries 247

5.3.3.4. H6: Firm Autonomy is more Strongly (Positively) Related to Business Performance in High-tech than in Less-tech Industries 249

5.3.3.5. H7: Firm Competitive Aggressiveness is more Strongly (Positively) Related to Business Performance in High-tech than in Less-tech Industries 251

5.4. Examining RQ3: The Relationship of the EO Dimensions with Performance Moderated by the Industry Conditions of Turbulence and Munificence 254

5.4.1. H8-H9: Initial Tests and Corrections of the Data 255

5.4.1.1. Analysis and Results (A) Targeting H8-H9: Early Descriptive Statistics: General Overview of Variables 255

5.4.1.2. Analysis and Results (B) Targeting H8-H9: Early Descriptive Statistics: Correlations by Moderating and Dependent Variables 258

5.4.1.3. Analysis and Results (C) Targeting H8-H9: Descriptive Statistics: Non-transformed versus Transformed Variables 262

5.4.2. Analysis and Results (D) Targeting H8-H9: Statistics: Moderating Effects Regression Analysis 267

5.4.2.1. Statistics: Moderating Effects Regression Analysis Model 1 (Control Variables) 277

5.4.2.2. Statistics: Moderating Effects Regression Analysis Model 2 (Adding Independent Variables) 279

5.4.2.3. Statistics: Moderating Effects Regression Analysis Model 3 (Adding Moderating Variables) 281

5.4.3. H8-H9: Results Summary 285

5.4.3.1. H8: Industry Turbulence Positively Moderates the Relationship between EO and Firm Performance such that EO will have a Greater Effect on Firm Performance when Industry Turbulence is High rather than Low 286

5.4.3.2. H9: Industry Munificence Negatively Moderates the Relationship between EO and Firm Performance such that EO will have a Lower Effect on Firm Performance when Industry Munificence is High rather than Low 288

5.5. Examining RQ4: The Relationship of the EO Dimensions with Performance under Temporal Considerations 291

5.5.1. H10: Initial Tests and Corrections of the Data 292

5.5.1.1. Analysis and Results (A) Targeting H10: Early Descriptive Statistics: General Overview of Variables 292

5.5.1.2. Analysis and Results (B) Targeting H10: Descriptive Statistics: Non-transformed versus Transformed Variables 296

5.5.2. Analysis and Results (C) Targeting H10: Statistics: Temporal Considerations Regression Analysis 301

5.5.3. H10: Results Summary 306

5.5.3.1. H10: EO has a Positive Effect on 3-year Firm Performance 306

5.6. Hypotheses Confirmation Overview Table 312

CHAPTER 6: DISCUSSION 314

6.1. Discussion of Findings pertaining to RQ1: Contributions from an Ideal Profile Configuration Analysis of EO under Consideration of Industry Types 315

6.2. Discussion of Findings pertaining to RQ2: Contributions from a Regression Analysis on the Contingency Relationship of EO with Performance Moderated by Industry Types 323

6.3. Discussion of Findings pertaining to RQ3: Contributions from a Regression Analysis on the Contingency Relationship of EO with Performance Moderated by Industry Conditions 331

6.4. Discussion of Findings pertaining to RQ4: Contributions from a Regression Analysis on the Contingency Relationship of EO with Performance under Temporal Considerations 340

CHAPTER 7: CONCLUSION, IMPLICATIONS, LIMITATIONS, AND DIRECTIONS FOR FUTURE RESEARCH 350

7.1. Overall Contributions to Research of EO 350

7.1.1. Overall Contributions pertaining to RQ1: Configurational Theory and Ideal Profiles 353

7.1.2. Overall Contributions pertaining to RQ2: EO Multi-Dimensions Contingency Impact towards Performance 354

7.1.3. Overall Contributions pertaining to RQ3: Impact of the External Environment on the EO-Performance Relationship 356

7.1.4. Overall Contributions pertaining to RQ4: Temporal Considerations of the EO-Performance Relationship 358

7.1.5. Overall Contributions from the use of Computer-Aided Text Analysis (CATA) 359

7.2. Implications for Firms and Top-Level Managers 360

7.2.1. Implications for Firms and Top-Level Managers pertaining to: Configurational Theory and Ideal Profiles 360

7.2.2. Implications for Firms and Top-Level Managers pertaining to: EO Multi-Dimensions Contingency Impact towards Performance 364

7.2.3. Implications for Firms and Top-Level Managers pertaining to: Impact of the External Environment on the EO-Performance Relationship 366

7.2.4. Implications for Firms and Top-Level Managers pertaining to: Temporal Considerations of the EO-Performance Relationship................................... 367

7.3. Limitations of this Study.. 369

7.3.1. Limitations of this Study from the use of Computer-Aided Text Analysis (CATA) 369

7.3.2. Further Limitations of this Study regarding the Conceptual Model................ 371

7.4. Recommendations and Directions for Future Research of EO............................ 375

7.4.1. General Recommendations and Directions for Future Research.................. 375

7.4.2. Recommendations and Directions for Future Research pertaining to: Configurational Theory and Ideal Profiles 378

7.4.3. Recommendations and Directions for Future Research pertaining to: EO Multi-Dimensions Contingency Impact towards Performance............................... 379

7.4.4. Recommendations and Directions for Future Research pertaining to: Impact of the External Environment on the EO-Performance Relationship 385

7.4.5. Recommendations and Directions for Future Research pertaining to: Temporal Considerations of the EO-Performance Relationship................................... 387

7.4.6. Recommendations and Directions for Future Research from the use of Computer-Aided Text Analysis (CATA)... 389

7.5. Research Conclusion 391

REFERENCES 392

APPENDICES... 415

Appendix 1: Theoretical Framework: Advancing the Stabilisation of Theorising in EO Research: Structure-Conduct-Performance (SCP) Model 416

Appendix 2: Sample Selection and Classification: Final List of Firms Categorised by HT versus LT and Availability of Data Source.. 419

Appendix 3: Data Collection: CATA Final Word List per Industry Condition 433

Appendix 4: Data Validity: Subject Matter Expert Word Categorisation Instructions....... 436

Appendix 5: Data Validity: CATA Final Word List per EO Multi-Dimension..................... 438

Appendix 6: Analysis and Results: Ideal Profiles: Ranking Option (i) Composite Ranking Score 448

LIST OF TABLES

Table 1: Previous Selected Definitions of EO over Time (Source: Covin & Wales, 2012).... 13

Table 2: EO Impacting Performance: Previous Studies on a Universal EO-Performance Linkage 38

Table 3: EO Impacting Performance: Previous Studies on an Independent EO-Performance Linkage 40

Table 4: Stabilisation of Theorising in EO Research: Selected Promising Theoretical Areas Suggested in Reviews of EO (Source: Wales, 2016) 74

Table 5: Theoretical Framework: EO Impacting Performance: Contingency Variables related to EO-Performance (Source: Lumpkin & Dess, 1996) 92

Table 6: Sample Selection: North American Industry Classification System (NAICS) Code Explanation 124

Table 7: Sample Selection: NAICS 2 Classification Structure & Industry Type Classification 125

Table 8: Sample Selection: NAICS 6 Classification Structure & Industry Type Classification (HT)........ 128

Table 9: Data Collection: Performance Considerations Market Share 143

Table 10: Data Validity: Recommended Procedures to Enhance Construct Validity When Using CATA (Source: Short et al., 2009) 150

Table 11: Data Validity: Word Lists for EO Multi-Dimensions (includes words from Short et al., 2009 plus those derived from literature)........ 153

Table 12: Data Analysis and Results: H1: LT & HT T5/10% and P5/10% Performers 2012 – z-score statistics 165

Table 13: Data Analysis and Results: H1: LT & HT T5/10% and P5/10% Performers 2012 – Composite Performance Score........ 167

Table 14: Data Analysis and Results: H1: EO Dimension Construct Means, Standard Deviations, and Correlations by Industry Type of HT or LT and Sample Source of LTS and 10-K (Pearson Correlation) 171

Table 15: Data Analysis and Results: H1: EO Dimension Combined Construct Means, Standard Deviations, and Correlations by Sample Source of LTS and 10-K (Pearson Correlation Combined for HT and LT) 172

Table 16: Data Analysis and Results: H1: ANOVA comparing EO Dimension Means for LTS versus 10-K 174

Table 17: Data Analysis and Results: H1: Correlation among Study Variables (LTS versus 10-K) 176

Table 18: Data Analysis and Results: H1: ANOVA Comparing EO Dimension Means of HT versus LT T10% 178

Table 19: Data Analysis and Results: H2: Construct Means, Standard Deviation, and t Test for Evidence of Language Representing EO Dimensions in LTS/10-K by Performance 181

Table 20: Data Analysis and Results: H2: Profile Deviation Scores in LTS/10-K by Performance 186

Table 21: Data Analysis and Results: H2: Regression Models for EO fit with Performance HT versus LT incl. T10% versus P10% 193

Table 22: Data Analysis and Results: H3-H7: Early Descriptive Statistics: General Overview of Study Variables (10-K) 202

Table 23: Data Analysis and Results: H3-H7: Early Descriptive Statistics: General Overview of Study Variables (LTS) 203

Table 24: Data Analysis and Results: H3-H7: Descriptive Statistics: Test for Skewness and Kurtosis (DVs and CVs) 208

Table 25: Data Analysis and Results: H3-H7: Descriptive Statistics: Test for Non-Normality (Shapiro-Wilk Significance DVs and CVs) 209

Table 26: Data Analysis and Results: H3-H7: Descriptive Statistics: Variables selected for final Analyses (DVs and CVs) 211

Table 27: Data Analysis and Results: H3-H7: ANOVA Comparing EO Dimension Means for HT versus LT firms 213

Table 28: Data Analysis and Results: H3-H7: Early Descriptive Statistics: EO-dimensional Cluster Analysis Numbers per Cluster 215

Table 29: Data Analysis and Results: H3-H7: Statistics: Interaction Terms based Mean Values per Dimension: 10-K 222

Table 30: Data Analysis and Results: H3-H7: Statistics: Interaction Terms based Mean Values per Dimension: LTS 222

Table 31: Data Analysis and Results: H3-H7: Statistics: Interaction Terms HT with LT Regression Analysis Sales Growth (2012 & 2014) 228

Table 32: Data Analysis and Results: H3-H7: Statistics: Interaction Terms HT with LT Regression Analysis Market Share (2012) 230

Table 33: Data Analysis and Results: H3-H7: Statistics: Interaction Terms HT with LT Regression Analysis Gross-Profit-Margin (2012 & 2014) 231

Table 34: Data Analysis and Results: H3-H7: Statistics: Interaction Terms HT with LT Regression Analysis Return on Assets (2012 & 2014) 233

Table 35: Data Analysis and Results: H8-H9: Early Descriptive Statistics: General Overview of Study Variables (LTS and 10-K) 257

Table 36: Data Analysis and Results: H8-H9: Early Descriptive Statistics: Correlations by Moderating and Dependent Variables (Pearson Correlation 10-K Data) 260

Table 37: Data Analysis and Results: H8-H9: Early Descriptive Statistics: Correlations by Moderating and Dependent Variables (Pearson Correlation LTS Data) 261

Table 38: Data Analysis and Results: H8-H9: Descriptive Statistics: Test for Skewness and Kurtosis (Moderating Variables) 265

Table 39: Data Analysis and Results: H8-H9: Descriptive Statistics: Test for Non-Normality (Shapiro-Wilk Significance Moderating Variables) 266

Table 40: Data Analysis and Results: H8-H9: Statistics: Moderator (Turbulence and Munificence) Regression Analysis Sales Growth (2012 & 2014) 270

Table 41: Data Analysis and Results: H8-H9: Statistics: Moderator (Turbulence and Munificence) Regression Analysis Market Share (2012) 272

Table 42: Data Analysis and Results: H8-H9: Statistics: Moderator (Turbulence and Munificence) Regression Analysis Gross-Profit-Margin (2012 & 2014) 273

Table 43: Data Analysis and Results: H8-H9: Statistics: Moderator (Turbulence and Munificence) Regression Analysis Return on Assets (2012 & 2014) 275

Table 44: Data Analysis and Results: H10: Early Descriptive Statistics: General Overview of Study Variables (10-K and LTS) 295

Table 45: Data Analysis and Results: H10: Descriptive Statistics: Test for Skewness and Kurtosis (Dependent Variables) 299

Table 46: Data Analysis and Results: H10: Descriptive Statistics: Test for Non-Normality (Shapiro-Wilk Significance Dependent Variables) 300

Table 47: Data Analysis and Results: H10: Statistics: Temporal Considerations Regression Analysis Sales Growth (2012 to 2014)... 303

Table 48: Data Analysis and Results: H10: Statistics: Temporal Considerations Regression Analysis Gross-Profit-Margin (2012 to 2014).. 304

Table 49: Data Analysis and Results: H10: Statistics: Temporal Considerations Regression Analysis Return on Assets (2012 to 2014)... 305

Table 50: Data Analysis and Results: Hypotheses Confirmation Overview Table.............. 312

LIST OF FIGURES

Figure 1: The Unidimensional versus Multidimensional Perspective: Multidimensional Perspective of EO: Conceptual Framework (Source: Lumpkin & Dess, 1996) 24

Figure 2: EO Impacting Performance: Conceptual Framework (Source: Lumpkin & Dess, 1996) 45

Figure 3: Vertical Dimensionality: Mid-Level Managers: Perceptions of Internal Environment on EO (Source: Hornsby, Kuratko, & Zahra, 2002) 62

Figure 4: Alternative Contingency Theories: Moderating-Effects Models (Source: Lumpkin & Dess, 1996) 76

Figure 5: Alternative Contingency Theories: Mediating-Effects Models (Source: Lumpkin & Dess, 1996) 77

Figure 6: Alternative Contingency Theories: Independent-Effects Models (Source: Lumpkin & Dess, 1996) 78

Figure 7: Alternative Contingency Theories: Interaction-Effects Models (Source: Lumpkin & Dess, 1996) 79

Figure 8: Summary of Current Gaps in Literature: Research Questions 89

Figure 9: Theoretical Framework: Contingency and Configurational Views 97

Figure 10: Theoretical Framework: Conceptual Agreement on an EO Framework 99

Figure 11: Hypotheses: Hypotheses H1 and H2 Targeting RQ1 104

Figure 12: Hypotheses: Hypotheses H3 to H7 Targeting RQ2 112

Figure 13: Hypotheses: Hypotheses H8 and H9 Targeting RQ3 114

Figure 14: Hypotheses: Hypothesis H10 Targeting RQ4 116

Figure 15: Data Collection: Hypotheses H1 and H2 Targeting RQ1 (data year 2012) 146

Figure 16: Data Collection: Hypotheses H3 to H7 Targeting RQ2 (data year 2012) 147

Figure 17: Data Collection: Hypotheses H3 to H7 Targeting RQ2 (performance lagged to 2014) 147

Figure 18: Data Collection: Hypotheses H8 and H9 Targeting RQ3 (data year 2012) 148

Figure 19: Data Collection: Hypotheses H10: Targeting RQ4 (data year 2013-2015)........ 149

Figure 20: Data Analysis and Results: Hypotheses H3 to H7 Targeting RQ2 (data year 2012) 196

Figure 21: Data Analysis and Results: Hypotheses H3 to H7 Targeting RQ2 (performance lagged to 2014) 197

Figure 22: Data Analysis and Results: H3-H7: Early Descriptive Statistics: EO-dimensional Cluster Analysis Graphical View 219

Figure 23: Data Analysis and Results: H3-H7: Statistics: Histograms and Normal P-P Plots of Interaction Terms Regression - Standardised Residual Variables Overview 227

Figure 24: Data Analysis and Results: Hypotheses H8 and H9 Targeting RQ3 (data year 2012) 255

Figure 25: Data Analysis and Results: Hypotheses H10: Targeting RQ4 (data year 2013-2015) 292

Figure 26: Overall Contributions to Current Research of EO: Contingency and Configurational Views 351

Figure 27: Recommendations and Directions for Future Research: Diagnostic Tool of Vertical and Horizontal Dimensionality over time (Year 1 and Year 2) 384

LIST OF ABBREVIATIONS USED IN THE MANUSCRIPT

Abbreviation	Description
10-K/10K	10-K Filings
CATA	Computer-Aided Text Analysis
CEO	Chief Executive Officer
CT	Centred Terms (context of regression)
CV	Control Variable
DV	Dependent Variable
EO	Entrepreneurial Orientation
FY	Fiscal Year
GPM	Gross-Profit-Margin
HR	Human Resources
HT	High-tech intensive
IT	Information Technology (context of the industry)
IT	Interaction Terms (context of regression)
IV	Independent Variable
LT	Less-tech intensive
LTS	Letters to Shareholders
MS	Market Share
MV	Moderator Variable
NAICS	North American Industrial Classification System
OTE	Organisational Task Environment
P10%	Poorest Performers (10%)
P5%	Poorest Performers (5%)
R&D	Research and Development
ROA	Return on Assets

ROI	Return on Investment
RQ	Research Question
S&P	Standards and Poor’s
SBA	Small Business Act
SCP	Structure-Conduct-Performance
SG	Sales Growth
SIC	Standard Industrial Classification
SME	Small to Medium Enterprise
T10%	Top Performers (10%)
T5%	Top Performers (5%)

STATEMENT OF COPYRIGHT

ACKNOWLEDGEMENTS

Firstly, I would like to express my sincere gratitude to my supervisors for the relentless backing and the ceaseless imparting of knowledge through every stage of this thesis for the last three years. They have been a pillar of support during the information gathering, research conduction, and dissertation preparation, guiding me to extract the best results.

Secondly, I would like to extend my appreciation to my employer, my direct management, and team members. Over the last couple of years, all of them have supported me in this journey, giving me valuable insights and assisting me in this endeavour. I had assumed that conducting full-time work and research in different countries would be tough. Even though the days were long and weekends short, all of you made it possible, and even enjoyable. Thank you!

Thirdly, and last but not the least, I would like to acknowledge the support and belief bestowed on me by my family and friends. Thank you for your everlasting motivation and unending patience throughout this entire process.

It has been an enriching, exciting, and incredible journey!

Cheers,

Ben

CHAPTER 1: INTRODUCTION

Historian Daniel J. Boorstin famously stated, “The greatest obstacle to discovery is not ignorance, it is the illusion of knowledge”. The need for questioning what is known in an effort to discover a vaster store of knowledge forms the very core of this thesis.

The emergence of Corporate Entrepreneurship in the 1980s saw with it the popularisation of what was soon to be known as Entrepreneurial Orientation (EO). It has been established as one of the principal concepts in business entrepreneurship ever since it was introduced (in its original form) in the seminal work of Miller (1983), over three decades ago. Entrepreneurial Orientation can be considered to be the centrepiece of organisational efforts in understanding and bettering product innovativeness, risk-taking, and proactiveness. In brief, EO pertains to a firm-level strategic orientation that reflects the firm’s managerial styles and organisational behaviours ‘[capturing] firm-level entrepreneurship patterns and processes’ (Wales, Monsen, and McKelvie, 2011). Today, EO remains one of the most established concepts within the field of corporate entrepreneurial research (Covin & Wales, 2018). Prior studies identify it as an organisational construct that ‘pervade[s] the organisation at all levels’ (Covin and Slevin, 1991).

However, while much of the literature concurs regarding the pervasive nature of EO, there remain little insights and mixed results into the nuanced contextual working of this construct. In fact, in assessing EO, a majority of the previous studies have investigated its three most common characteristics, namely innovativeness, risk-taking, and proactiveness. These have been studied in an attempt to measure and analyse their effect on business performance on a unidimensional basis in which all three form a single EO construct, usually establishing an overall positive impact (Rauch et al., 2009; refer also to Martins & Rialp, 2013 and Shirokova et al., 2016). These works argued that EO may enable firms to accomplish their goals by building new knowledge for growing capabilities with a long-term focus (Lumpkin & Dess, 1996; Zahra, 1991). Yet, such studies differ from Lumpkin and Dess' (1996) insightful conceptualisation of EO since some initiatives detected no significant or even negative effects on performance (refer also to the early work of Covin & Slevin, 1989). These theorists view EO as being driven by five (not three) dimensions, each with the ability to individually and interdependently affect firm performance. They refined the construct by adding autonomy and competitive aggressiveness to the already established three parameters. As these were conceived to vary on an independent basis, each dimension was hypothesised to presenting a potentially differing value, determined on the basis of internal and external factors (such as the firm's ideal configurations, or contingencies of industry types and conditions), to the various firm performance measures such as sales growth, gross-profit-margin, market share, and return on assets (the dimensionality of EO remains a matter of contemporary debate, refer to Schueler et al., 2018).

1.1. Background of this Study and Emerging Gaps

Despite this insightful conception of EO, according to Covin and Wales (2012), Wales (2016), Zahra, Jennings, and Kuratko (1999) and others, the construct has already been manifested in the past, albeit under different terminology. The entrepreneurial activities of firms have been given different labels throughout their research history. These labels include a variety of terms such as posture, propensity, corporate entrepreneurship, and finally entrepreneurial orientation. In observing these various constructs, it has become evident that the current definition of EO took form through the examination of entrepreneurship within firms as depicted through the works of Mintzberg (1973), Khandwalla (1976, 1977), and notably Miller (1983, 2011). However, even though Miller did not coin the term EO, his original examination went on to become the universal definition of the construct, establishing the core understanding of the concept (Miller, 2011). With additional research in the field, it was Covin and Slevin (1989) who furthered Miller's line of argument into the current day understanding of EO. They saw this as an organisational-level phenomenon, establishing it as the baseline for much of the subsequent research. Even though firms may potentially grow through mergers and acquisitions, joint ventures, or strategic alliances too, previous research on firm-level entrepreneurship focusses primarily on internal venture expansions (Burgelman, 1983; Dess & Lumpkin, 2005) which will therefore be in the focus of this thesis (earlier efforts on external corporate venturing are acknowledged such as Keil, 2002 & Williams, 2018).

Entrepreneurially oriented firms were conceived as those that display recurring entrepreneurial behavioural patterns (Covin & Slevin, 1991; Wales, 2016). In a review piece, Wales (2016) argued that firms are required to combine sustained entrepreneurial behaviour with managerial decisions to deal with uncertain entrepreneurial actions over time (see also Covin & Lumpkin, 2011). Anderson et al. (2015) described this as temporal stability respectively as the required consistency in the entrepreneurial behaviour of firms over a certain period of time. However, Wales et al. (2011) concluded that a firm might experience sequenced periods of low (non-existence of entrepreneurial behaviour) and high levels of EO (existence of entrepreneurial behaviour) (also refer to Wales, 2016). Following the examinations of Covin and Slevin (1991), EO is said to manifest through sustained entrepreneurial behaviour which qualifies it as an organisational state of a firm and not as an irregularity (Covin & Miller, 2014; Ireland et al., 2009). The limited quantity of time-based studies in EO research confronts scholars till date to determine causal relationships between EO, its environmental and industrial contexts, and firm performance (Wales, 2016). Furthermore, Wales et al. (2011) have argued that the understanding of the why, how, and when firms potentially sequence their EO over time is yet to be examined.

Following these identified needs, Lumpkin and Dess (1996) stated that to accurately describe a firm as entrepreneurial would depend on considerations that go beyond the boundaries of the EO construct; for example, organisational and environmental firm contexts would need to be included as the variables of the industry. These calls to recognise the effects of contingent factors such as the industry type that a firm competes in (refer to Rauch et al., 2009) have challenged the unidimensional main-effects model of EO on business performance, stating an incompleteness of a direct-effects-only analysis (Choi & Williams, 2016). This contingency view was furthered by Wiklund and Shepherd's (2005) proposition of the configurational approach, a three-way interaction model including EO as well as internal and external factors, to grasp the effects of an EO on business performance. These insights on the construct transformed the understanding of the nuances of EO, rendering much of the previous research flawed due to its missing contextuality. Where Miller (1983) defined EO as the consistent exhibition of innovativeness, risk-taking, and proactiveness, Lumpkin and Dess (1996) proposed a concept of dimensional heterogeneity that requires the individual consideration of each of the five critical dimensions and their organisational context. It started to become apparent that EO may be more or less valuable for firm performance under different contexts and may also oscillate over time. This radical re-definition of EO was the beginning of substantial theoretical practice (Wales et al., 2013) and formed the basis for the misalignment of the original conceptualisation of the unidimensional with the multidimensional understanding of EO.

Regardless the constant developments on the multidimensionality of EO in recent years, Wiklund and Shepherd (2011) argued that the findings on the causal mechanism of the EO-performane linkage have mainly been implicated rather than clearly assessed. Moreover, "studies have undertheorised the heterogeneous nature of context, with consequent implications for empirical work and the insights that are derived" (Zahra & Wright, 2011: 71-72). By understanding what causal outcomes are likely to result from a context-related EO execution, researchers may have become more able to learn about "how" and "why" EO stimulates and enhances business performance.

More stabilised theorising of EO knowledge is vital to current and future research. Acknowledging the redefined multidimensional conceptualisation of EO, within this thesis, there have come to light significant gaps within previous EO research initiatives based on different contexts. More specifically, as per the configurational approach, there remains a lack of an industry type classification (high-tech versus less-tech) to date; meanwhile, according to the contingency approach, there is little research on the multidimensionality of EO and performance when considering the different industry types; the environmental approach lacks a strong linkage between the industrial condition and the EO-performance relationship; and the temporal approach has only a few studies pertaining to the EO-performance linkage to provide adequate insights over time. It is these gaps in EO research and understanding that are investigated throughout this study.

While Miller’s (1983) definition of EO has been widely accepted by scholars, it operates on the assumption of the uniform and universal impact of all dimensions and does not include the above-stated considerations. It fails to take into account the variation within the dimensions and their different impact on corporate performance measures. Therefore, Lumpkin and Dess’ (1996) model presents increased flexibility within the structural approach to allow for the five EO dimensions to impact performance measures on an individual basis. Upon studying the nuances, it is paramount that research is required to derive and define relevant samples and contextual findings. These are essential when assessing specific settings and situations within management, entrepreneurship as well as EO literature. In considering EO as a multidimensional construct, addressing its five dimensions of innovativeness, risk-taking, proactiveness, autonomy, and competitive aggressiveness, studies allow for the exploration of more significant insights into the performance impact conditioned by nuanced contextual configuration and contingency aspects.

Consequently, while Lumpkin and Dess’ (1996) construct leaves several aspects (here contexts) to be explored, it has presented a plausible trajectory for the EO contemporary development and conceptualisation, thereby making it highly relevant to current research. It remains to be investigated whether an implementation of EO dimensions is a purely strategic choice or whether entrepreneurial activities are to be planned and executed individually according to a firm's context-related settings of EO in order to retain continuous performance improvements. Henceforth, this thesis is based on the five-dimensional approach, using it to investigate (RQ1) whether and how a firm can achieve an ideal profile of EO dimensions as well as the manner in which this fit may vary across industry contexts (configurational theory); (RQ2) whether and which dimensions may be more beneficial towards the contingency of firm performance as opposed to the others when considering factors such as different industry types (high-tech versus less-tech intensive firms) and (RQ3) the impact of environmental conditions (industry turbulence and munificence); and, finally, (RQ4) whether the effects of EO may last longer than their initial investment period.

1.2. Aims, Objectives, and Research Questions

By closely assessing the impact of EO dimensions on firm performance measures, this study aims to provide novel insights that add to the existing body of EO literature. Based on research questions 1 through 4, the following hypotheses are proposed:

Firstly, relating to research question 1, by linking the configurational ideal profile approach[1] of EO with performance, along with the impact of its deviation as per the industry types of high-tech versus less-tech, it is hypothesised that the configuration of the EO dimensions required for optimal performance differs across both the industry types. This study, therefore, aids in establishing an understanding of the ideal EO configuration required for improved performance across both high-tech and less-tech intensive firms.

[1] According to the configurational theory, performance may be increased by an optimal alignment of key variables within firms (as initially investigated by Naman & Slevin, 1993) and its environment (Kearney et al., 2017; Venkatraman, 1989). It implies the need for the 'perfect' or 'ideal' fit of those variables to each other. Configuration theory is both a set of predictive guidelines and an associated analytical technique to determine what specific configurations or constellations of factors are exhibited by firms characterised as being 'high performers', and whether deviance from such a profile is indicative of poor performance among firms outside of this elite group.

Secondly, relating to research question 2, this research may establish a link between the various EO dimensions and their impact towards the contingency[2] of firm-performance across both industry types. Herein, it has been hypothesised that each of the EO dimension is more strongly associated with firm performance in high-tech intensive firms as opposed to less-tech firms.

Thirdly, relating to research question 3, this study analyses the moderating role of industry turbulence and munificence in the context of the EO performance relationship. Here, industry turbulence refers to the sustainability of the environment. Therefore, it has been hypothesised that it positively moderates the EO and business performance relationship. Industry munificence, on the other hand, refers to the extent to which an environment can support the sustained growth of a firm. Mature or decreasing industries are considered to be low on 'munificence'; hence, this condition has been hypothesised to have a negatively moderating effect on the EO and business performance relationship.

Fourthly, relating to research question 4, this study examines the long-term, or temporal, impact of EO onto the defined distinct performance measures over a period of three years to accurately assess the impact of the same on firm performance. This aspect is based on the hypothesis that EO set forth at one point in time can positively influence firm performance over a period of three years.

1.3. Research Philosophy, Design, and Methodological Approach

Driven by the availability of previous literature on the topic to define clear and well-structured gaps and hypotheses, an epistemological research position for this work was selected that is

[2] The early research relied on the universal-effect model in which a fixed level of EO is assumed to be universally beneficial for firm performance (Wiklund & Shepherd, 2005). Questioning the universal conceptualisation, researchers started using contingency theories to grasp whether a certain EO level would have a greater or lesser impact on performance since each firm is different and faces diverse situations (Wales, 2016; Wiklund & Shepherd, 2005).

positivistic, of a quantitative type, confirmatory and descriptive in its core while also including a temporal component into the research design. Considering the methodological approach to answer the presented research questions, the proposed hypotheses were tested based on a sample of US companies drawn from the Standard & Poor 500. These were selected to provide a relatively equal representation of high-technology and less-technology intensive companies, based on their industry classifications. The levels of the five EO dimensions were assessed via content analysis of firm reports, conducted using a computer-aided text analysis (CATA) approach and a set of keywords related to the EO dimensions that was based on Short et al.'s (2009) earlier research. Scores for the dimensions are based on the frequency of words within the firm documents. Performance indicators and information related to the moderating and control variables were sourced from COMPUSTAT.

Thus, this study is among relatively few works to use CATA for the measurement of EO. Amongst other things, it makes a contribution by extending the initial database of keywords developed in early efforts using this approach, and also by – as much as possible – drawing on two separate data sources for each company to protect against errors from a single data source. The two data sources that have been used are: (i) Letters to Shareholders (LTS), which have been employed in previous EO studies and (ii) 10-K filings, which have not been used in this specific context as yet. Both the file sources have been individually analysed for the corresponding research questions since they pertain to two different audiences. The similarity and difference between their results have been documented in detail. In comparing the LTS and 10-K filings, this research has set the stage for the need to examine differing file sources for added insight into firm-level EO.

1.4. Major Contributions

This thesis contributes to the current and future research on EO by outlining a line of argument that states that, in addition to the debate of a uni- or multidimensional conceptualisation, an investigation of configurational, contingency, environmental, and temporal aspects is essential to describe a contextually well-defined and comprehensive firm-level construct of the EO-performance linkage. As a baseline for this, the following findings were derived through the course of this study:

Firstly, relating to research question 1, this work found that EO is associated with high performance in the set of ideal profile firms whereas deviance is associated with mediocre outcomes in the remaining firms. Inconsistencies in the EO-performance linkage, therefore, are perceived to be driven by a poor configuration of the EO multi-dimensions. Furthermore, it was examined to what extent the configuration associated with optimal performance remains the same across both the industry types. Herein, it was discovered that the ideal profiles do not differ across the two industry types of high-tech and less-tech which a novel observation brought to EO research.

Secondly, relating to research question 2, within the context of this study, it was discovered that EO is, in fact, to be conceived as a multi-dimensional construct comprising of five dimensions as each has either a positive or a negative impact on individual performance measures (here under consideration of the contingency approach). However, such a linkage generally does not differ with respect to the two industry types of high-tech and less-tech (except for two dimensions related to the market share measure within specific data sources) which was not investigated before.

Thirdly, pertaining to research question 3, it was discovered that industry turbulence regarding sales stability positively moderates the EO-performance linkage for the performance indicator of market share (regarding employee stability an even negative effect was observed). In contrast, for industry munificence, characterised by employee growth, a negatively moderating effect on the EO-performance relationship was observed for the same performance indicator. Thus, various of the industry turbulence and munificence variables are considered as central environmental influencers towards the EO-firm performance linkage regarding market share which is regarded as major contribution to EO research. Even so, with respect to the remaining studied performance indicators, no such effect was observed.

Lastly, relating to research question 4, innovativeness was the sole dimension that positively affected the performance indicator of gross-profit-margin over a period of two years. Moreover, an adverse effect for risk-taking on return on assets was also found over the same time-span. As a consequence, EO, when considering the nuanced research within this thesis (cross-sectional of firms and/or industry types and conditions), was neither linked with generally positive nor superior firm performance as has been assumed across a great amount of previous studies but was instead associated with varying levels of the EO-performance linkage over time.

1.5. Structure of this Thesis

To accurately assess the impact of EO on firm performance measures and identify its nuances, this thesis begins with a literature review. It provides a comprehensive overview of the research history of EO, setting the stage by identifying the advantages of, and gaps within, the previous research. Several of these gaps were identified as the most urgent ones to be addressed in the course of this study (explicitly focussing on configurational, contingency, external environmental, and temporal considerations). By understanding the impact of EO and its prevalence within the business performance, this research aids in establishing the necessity for further studies into the same, analysing the nuances of this long-established construct as well as the challenges faced in doing so.

The chapter on the theoretical framework and hypotheses then aids in the development of the analyses patterns as well as the conceptual agreement based on the varied approaches of contingency and configuration theory. This development is followed by the presentation of the four targeted research questions that drive this thesis, evaluating them on the basis of the configurational, contingency, external environmental, and temporal aspects.

Next, the research philosophy and design are presented. The methodology then is discussed to outline the process of sample selection and classification, measurement implications, data collection, validity and reliability of the EO. It also addresses the ethical considerations raised during the course of this study.

Following this, the analysis and results presented comprise the examination of the EO dimensions based on the research questions established above. This assists with deciphering the data yielded through the study, enabling us to understand its impact on EO literature.

The discussion chapter details out the contributions of this study and the effects of the findings on future research, while the conclusion presents an overview of this research and its findings. It depicts the implications for firm-level managers as well as the shortcomings of this research. Lastly, the recommendations and directions for subsequent EO research are propositioned to provide researchers with solutions for improved efficiency in prospective studies.

CHAPTER 2: LITERATURE REVIEW

This chapter will outline previous definitions of entrepreneurial activities within firms and the manifestation of an entrepreneurial orientation as well as its typical conceptualisation within previous scholarly works to provide a comprehensive review of the concept of EO. This presentation will be followed by reviewing the current literature on the uni- versus multi-dimensional perspective and by evaluating previous studies on the linkage of entrepreneurial orientation with business performance including possible influencers. Additional to vertical, horizontal, and temporal dimensionality considerations, this will create the base for a further examination of the possible stabilisation of theorising within EO scholarly works and the base to debate on current gaps within this research space.

2.1. Previous Definitions of Entrepreneurial Activities within Firms and the Manifestation of Entrepreneurial Orientation

Entrepreneurial Orientation, henceforth EO, is considered as one of the most critical concepts in corporate entrepreneurial research (Covin & Wales, 2018). According to Covin and Wales (2012) and Zahra, Jennings, and Kuratko (1999), the entrepreneurial activities of firms have been given different labels throughout its research history. These labels include a variety of terms such as entrepreneurial orientation, posture, propensity as well as corporate entrepreneurship. Table 1, reproduced from Covin and Wales (2012), portrays the evolution of the term EO by presenting a selected list of previous definitions leading up to the modern usage of the term (such as Anderson et al., 2015 and Covin & Wales, 2018). Consequently, it is evident that the current definition of EO took form through the initial examination of entrepreneurship within firms as depicted through the works of Mintzberg (1973), Khandwalla (1976, 1977), and particularly Miller (1983). Miller’s (1983) work has since gone on to provide the standard definition of EO, which is conceptualised by the three core dimensions of innovativeness, risk-taking, and proactiveness even though he did not coin the term ‘EO’ (Miller, 2011). It was Covin and Slevin (1989) who furthered Miller’s line of argument into the current day understanding of EO, which has been commonly considered an organisational-level phenomenon.

In contrast, Lumpkin and Dess (1996) have implied that for a firm to be described as entrepreneurial would depend on considerations that go beyond the boundaries of the EO construct; to include factors such as organisational and environmental firm contexts. Where Miller (1983) defined EO as the consistent exhibition of innovativeness, risk-taking, and proactiveness, Lumpkin and Dess (1996) proposed a concept of dimensional heterogeneity that requires individual consideration of each of the key dimensions and its organisational context. This radical re-definition of EO was the beginning of a substantial theoretical practice of the multidimensionality of EO (Wales et al., 2013). Section 2.2 will provide further insights on the construction around EO within previous works.

Table 1: Previous Selected Definitions of EO over Time (Source: Covin & Wales, 2012)

Authors	**Definition of EO**
Mintzberg (1973)	"In the entrepreneurial mode, strategy-making is dominated by the active search for new opportunities" as well as "dramatic leaps forward in the face of uncertainty" (p. 45).
Khandwalla (1976/1977)	"The entrepreneurial [management] style is characterised by bold, risky, aggressive decision-making" (p. 25, [ ] added).
Miller and Friesen (1982)	"The entrepreneurial model applies to firms that innovate boldly and regularly while taking considerable risks in their product-market strategies" (p. 5).
Miller (1983)	"An entrepreneurial firm is one that engages in product-market innovation, undertakes somewhat risky ventures, and is first to come up with 'proactive' innovations, beating competitors to the punch" (p. 771).
Morris and Paul (1987)	"An entrepreneurial firm is one with decision-making norms that emphasise proactive, innovative strategies that contain an element of risk" (p. 249).

Covin and Slevin (1998)	"Entrepreneurial firms are those in which the top managers have entrepreneurial management styles, as evidenced by the firms' strategic decisions and operating management philosophies. Non-entrepreneurial or conservative firms are those in which the top management style is decidedly risk-averse, non-innovative, and passive or reactive" (p. 218).
Merz and Sauber (1995)	"... entrepreneurial orientation is defined as the firm's degree of proactiveness (aggressiveness) in its chosen product-market unit (PMU) and its willingness to innovate and create new offerings" (p. 554).
Lumpkin and Dess (1996)	"EO refers to the processes, practices, and decision-making activities that lead to new entry" as characterised by one or more of the following dimensions: "a propensity to act autonomously, a willingness to innovate and take risks, and a tendency to be aggressive toward competitors and proactive relative to marketplace opportunities" (pp. 136–137).
Zahra and Neubaum (1998)	EO is "the sum total of a firm's radical innovation, proactive strategic action, and risk-taking activities that are manifested in support of projects with uncertain outcomes" (p. 124).
Voss, Voss, and Moorman (2005)	"… we define EO as a firm-level disposition to engage in behaviours [reflecting risk-taking, innovativeness, proactiveness, autonomy, and competitive aggressiveness] that lead to change in the organisation or marketplace" (p. 1134, [...] added).
Avlonitis and Salavou (2007)	"EO constitutes an organisational phenomenon that reflects a managerial capability by which firms embark on proactive and aggressive initiatives to alter the competitive scene to their advantage" (p. 567).
Cools and Van den Broeck (2007/2008)	"Entrepreneurial orientation (EO) refers to the top management's strategy in relation to innovativeness, proactiveness, and risk-taking" (p. 27).
Pearce, Fritz, and Davis (2010)	"An EO is conceptualised as a set of distinct but related behaviours that have the qualities of innovativeness, proactiveness, competitive aggressiveness, risk-taking, and autonomy" (p. 219).

According to former definitions of the EO manifestation, the term itself refers to either a uni- or multi-dimensional conceptualisation, commonly applied at the firm-level (Lumpkin & Dess, 1996 and Wales, 2016). Furthermore, EO characterises an organisation's entrepreneurial behaviour including the strategy- and decision-making processes as well as managerial philosophies that may lead to breaching existing or new markets (Lumpkin & Dess, 2001). EO manifests and evolves as part of corporate entrepreneurship as a firm state or quality through entrepreneurship-driven processes and behaviours (Ireland et al., 2009). As suggested by Wales (2016), although contingencies of an EO's efficiency may include different kinds and facets of a firm's activities (Covin & Slevin, 1991; Lumpkin & Dess, 1996), EO is recommended to be defined as an indispensable fragment of an independent and recognisable strategy to be manifested. In reference to Covin and Lumpkin (2011), and Wales (2016), EO has become not only one of the most studied fields within entrepreneurial literature in the past few decades, but it has also become a solid predictor of an organisation's performance.

Referring to the early work of Covin and Slevin (1991), researchers were able to theorise entrepreneurial behaviours, mainly driven by the EO's manifestation within firms that implied a certain degree of consistency of sustained behaviour over a longer period. Through strategic perception, this behaviour would make EO perceptible as well (see also Wales, 2016). This theory has been supported by Anderson et al. (2015), who referred to the unwavering or temporal stability of a firm's entrepreneurship. This understanding remains till date, according to which EO is assumed to represent multiple strategic dimensions, however, that can also be adapted as the basis of consistent entrepreneurial behavioural configurations (Wales, 2016). Furthermore, firms may experience periods of high EO – the presence of repetitive entrepreneurial behaviour –, and low EO – its absence (Wales et al., 2011).

Wiklund and Shepherd (2011) have described an unlimited performance variance in sustained entrepreneurial firms as not all entrepreneurial activities turn out to be successful and may leave a negative performance impact. With a higher level of EO including more innovative, risk-taking, and proactive activities, the variety of possible performance outcomes might grow (Wales, 2016). Additionally, this variance may be affected by a heterogeneous EO distribution

(Wales et al., 2011) across levels, areas, units, and maybe even industries. Ultimately, many conceptualisation approaches have been discussed in literature, and it remains open to future research predominantly, how a firm can comprehend its EO manifestation, as well as how it can target strategic decisions towards increased firm outcomes more effectively. These research perspectives will find further consideration within the following sections.

2.2. EO Conceptualisation

Within the history of modelling an EO construct, Covin and Slevin's (1991) configuration model has often found consideration; through its belief that environmental, organisational, and individual factors each play a role in impacting the firm-behaviour model of entrepreneurship. However, Wales (2016) has proposed a necessary amendment, stating that Covin and Slevin (1991) must also include a multidimensional modelling of firm EO. In consequence, Lumpkin and Dess (1996) defined a more explicit conceptualisation model, which associates internal strategic decision-making processes with numerous moderating environmental factors, especially with respect to an EO's impact on business performance (see section 2.3). Miller (2011), furthermore, has combined environmental and organisational considerations with strategic, cultural, and leadership/governance aspects. However, to date, research studies have not sufficiently studied the mechanisms through which EO affects a firm's performance. Consequently, theorists consider this to be the black box of EO (see Wales et al., 2011). The gap between a firm's given EO, and its ability to understand and influence its level of EO to impact performance outcomes positively will find consideration throughout the following sections by studying various possible impacting factors that are linked to the EO-performance relationship.

As indicated previously, prior research places the modelling of an EO construct in specific contexts in higher regard as it may provide greater and more meaningful insights into the various facets of EO; e.g., EO within certain industries or various firm-development stages

(Edmond & Wiklund, 2010; Miller, 2011; Wiklund & Shepherd, 2011). The sampling strategies used by many EO studies are designed to allow results to be generalised but make it difficult to study contextual effects (Wales, 2016). Moreover, various firm structures might have dissimilar impacting factors with regards to their EO-performance linkage (Miller, 1983), wherein, as a consequence, certain organisational types and industry contexts have found little consideration as of now (Miller, 2011). As stated by Wales (2015), the probabilities of the various casual proximal results originating from a firm's EO are left open to future research as well. Therefore, presenting a brief overview of the two predominantly applied key constructs of an EO and the reason behind their emergence within a firm, will allow for a better understanding behind how and why EO may impact a firm's performance when delving into additional EO related considerations within a later section (see sections 2.3 to 2.8).

2.2.1. Unidimensional versus Multidimensional Perspectives of EO

The dimensionality of a firm's internal EO has been the focus of a significant number of scholarly works (Wales, 2016), including its two differently emerging conceptualisations (Miller, 1983; Lumpkin & Dess, 1996) that can co-exist as each provides exclusive insights (Covin & Lumpkin, 2011; Covin & Wales, 2012; Miller, 2011; Schueler et al., 2018). In this regard, an organisation is defined as having a higher level of EO when it displays recognisable patterns of strategic behaviour over a defined period of time (Wales, 2016). According to Wales (2016), these patterns may have their basis in entrepreneurship. Hence, entrepreneurial attitudes and behaviours were understood to pervade the organisation at all levels (Covin & Slevin, 1991; Anderson et al., 2015). Researchers have integrated the three primary dimensions of innovativeness (launching new products/services and processes), proactiveness (aggressively looking for new opportunities that may result in a competitive advantage), and risk-taking (commitment towards leveraging vast amounts of financial assets for overall gain) into the initial considerations of an EO conceptualisation (Miller, 1983; Wales, 2016). Within this perspective, all three dimensions must be high to perceive a high level of

EO. Lumpkin and Dess (1996) offer a contrary perspective as per which EO is based on five dimensions. They extend the unidimensional perspective into a multidimensional view by adding competitive aggressiveness and autonomy into the list of influencing factors.

In contrast to Miller (1983), Lumpkin and Dess (1996) have suggested that different firms may develop diverse dimensional intensities since the elements may differ in how valuable they are to overall performance (see Hughes & Morgan, 2007; Schueler et al., 2018). In fact, to be considered as entrepreneurial, some dimensions may not be required by a firm at all. Hence, Lumpkin and Dess (1996) have recommended that each dimension should be examined independently to gain greater insights into a firm's EO. The debate within EO research continues about whether the uni- and the multi-dimensional view are both suitable methods to capture the EO-performance linkage (refer to Schueler et al., 2018; Wales, 2016). Section 2.3 'The Unidimensional versus Multidimensional Perspective' will further explore these key debates.

2.2.2. EO Impact on Performance

From the strategic perspective, EO may enhance an organisation's performance and its total variance within such a setting, particularly within highly competitive and uncertain environments (Rauch et al., 2009; Wiklund & Shepherd, 2005; Gupta & Wales, 2017); however, there are various views on the EO-performance linkage based on context. Multiple studies have found a significant correlation between a firms' EO and its performance (Miller, 2011; Schillo, 2011). Greater variances take place as many entrepreneurial activities fail to generate a direct, measurable economic return for the firm; therefore, they may contribute to firm performance indirectly (Covin & Wales, 2012; Wiklund & Shepherd, 2003). In this respect, Lumpkin and Dess (1996) have suggested the study of multidimensional perspectives of an EO and their relationship towards firm performance based on various indicators of sales growth, market share, profitability, overall performance, and stakeholder satisfaction (more recently noticed by Schueler et al., 2018).

Yet, an EO level that surpasses a certain range may be considered disadvantageous towards the financial performance (Miller & Friesen, 1982; Zahra, 1993) as compared to a more conservative strategic orientation (Covin & Slevin, 1991; Wales, Gupta, & Moussa, 2013; Wiklund, 1999). In a paper on EO in multinational corporations by Williams and Lee (2009), based on combining R&D and asset growth investment intensities, three types of entrepreneurial stance were defined: conservative, aggressive-asset growth, and balanced. Furthermore, similar to Rauch et al. (2009), Lumpkin and Dess (1996) have suggested the relevance of environmental moderators on the EO-performance linkage, such as dynamism, complexity as well as industry characteristics and organisational moderators, such as structure, size, strategy, resources, and culture. Ultimately, the majority of recent papers on EO have noticed its linkage to performance and agree that a relationship exists, however, that the relationship between EO and its performance is not a straightforward and positive one (Gupta et al., 2017; Schillo, 2011). Section 2.4 'EO and its Impact on Performance' will evaluate these causalities further and will examine industry as an external influencer in greater detail.

2.2.3. Vertical Dimensionality – A Firm-Level Perspective

Most scholars have studied EO at senior managerial levels, equating the idea of a management's impact on a firm's overall EO with it being a firm-level phenomenon (Kemelgor, 2002). In contrast, recent studies have begun to consider an EO's manifestation throughout a firm's framework or its presence at various hierarchical levels in the firm (Monsen & Boss, 2009; Wales et al., 2011). According to Anderson, Covin, and Slevin (2009), EO is manifested within an organisation's managerial philosophies under the premise that a firm is considered entrepreneurial as a collective entity (Kessler, 2013); but as one that is informed by the actions of senior managers. Hence, EO has predominantly been described as a phenomenon that is manifested in top-level management and at the firm level. The motivation for this is the call to theoretically divide organisations based on their managerial, strategic, and decision-making processes to apply the scientific research on EO into the functioning of various firms (Wales, 2016). Literature based on this concept has presented executives with insights on how an organisation can efficiently leverage the strategic entrepreneurial decision-making processes and behaviours to achieve organisational goals such as growth and renewal (Wales, 2016).

Recently, research on EO has begun to question whether it also might rely on the actions of lower-level employees (Covin & Slevin, 1991; Lumpkin & Dess, 1996; Miller, 1983). Within traditional research, however, the concept of firm-level entrepreneurship has been clearly separated from examining EO as an individual-level concept. Some scholars have suggested that an organisation’s entrepreneurial activities cannot be separated from those of an individual employee since they are seen as part of the whole (Covin & Slevin, 1991; Lumpkin & Dess, 1996; Miller, 1983). Moreover, EO literature argues that entrepreneurial behaviours may vary at different levels based on key organisational considerations; e.g., individuals’ level, functional range, and set goals (Wales et al., 2011; Zahra, 1993). Wales, Monsen, and McKelvie (2011) have evaluated an EO’s heterogeneous development along the three vertical dimensions of top- and middle-level managers as well as non-managerial employees. Where EO has previously been considered to be a firm-level phenomenon, Wales, Monsen, and McKelvie‘s (2011) study has initially suggested an EO manifestation across firms’ sub-units – from larger strategic business units to small individual divisions. Section 2.5 ‘Vertical Dimensionality’ will evaluate these further.

2.2.4. Horizontal Dimensionality

Organisations tend to comprise complex internal structures to allocate, coordinate, and supervise activities. Initially, Galbraith and Kazanjian (1986) have explained the need for these structures in three ways, including as a means to: (i) break down tasks into roles with responsibilities such as R&D, IT, and Finance; (ii) reorganise the roles into divisions based on their functionalities, products/services, market segments, and/or geographical regions (refer to Bogatyreva et al., 2017); and (iii) concentrate on a particular field of expertise within a role. Since these needs may ease the successful alignment of targets with defined missions and set goals (Kazanjian & Drazin, 1987), Tushman and O'Reilly (1996) have implied the manager's need to separate tasks into groups to secure the firm's efficiency and possible growth. According to the literature, entrepreneurial activities tend to take place at the level of firm divisions (Zahra, Jennings, & Kuratko, 1999). Due to the differentiation of roles and responsibilities across multiple functional areas and divisions, EO is more likely to manifest heterogeneously where it may stagnate otherwise (Wales, Monsen, & McKelvie, 2011). In this regard, Wales, Monsen, and McKelvie (2011) have defined possible horizontal dimensions such as Structure, Strategic Fit, and Job Design. Section 2.6 'Horizontal Dimensionality' will evaluate these further.

2.2.5. Temporal Dimensionality

EO tends to manifest through consistency in entrepreneurial behaviour (Covin & Slevin, 1991; Miller, 2011) wherein it can be conceptualised as a firm's pattern and not as an irregularity of actions (Covin & Miller, 2014; Ireland et al., 2009). Since a limited number of scholars have researched EO over time (see Rauch et al., 2009), the link between EO-performance to evaluate whether a temporal effect exists is majorly undiscovered (Wales, 2016). As a reason for these limited studies, Miller (2011) has stated that internal firm settings are barely measurable over time. Therefore, Wiklund and Shepherd (2011) have suggested the need for further methods to incorporate time, causality, and reciprocity as well as approaches to address temporal and longitudinal tests (Miller, 2011). Section 2.7 'Temporal Dimensionality' will provide greater insights into the same. Conclusively, firm performance might be contextually related to the EO exhibition across vertical, horizontal, and temporal dimensions.

Each of these factors will be studied from a theoretical standpoint throughout the following sections by initially addressing a more detailed understanding of the uni- and multi-dimensional conceptualisation.

2.3. The Unidimensional versus Multidimensional Perspective

As today's business environments are perceived as being complex and uncertain (Dreyer & Grønhaug, 2004), researchers have attempted to identify unidimensional as well as multidimensional perspectives to conceptualise a firm's EO (Rauch, Wiklund, Lumpkin, & Frese, 2009; Schueler et al., 2018). Early studies of Khandwalla (1977), Miller (1983), Mintzberg (1973), and Covin and Slevin (1989) have suggested a firm's EO being centralised through the execution of innovative, risk-taking, and proactive behaviours and practices. This unidimensional conceptualisation of EO has been extended by Lumpkin and Dess (1996) into a multidimensional view, firstly, by adding the two additional perspectives of autonomy, and competitive aggressiveness and, secondly, by considering the five dimensions as independent variables that do not require a uniform high level of all (Gupta, Dobratz, & Gupta, 2014; Schueler et al., 2018).

The unidimensional perspective measures innovativeness, risk-taking, and proactiveness independently to then composite an EO scale for further analysis (Miller, 1983). A majority of scholars accept and adapt Millers (1983) definition of an entrepreneurial firm being one that participates in product market innovations, entertains risky ventures, and develops proactive and innovative ideas. This perspective reflects the three uni-dimensions and has been used by scholars repetitively (Barringer & Bluedorn, 1999; Covin & Slevin, 1989; Naman & Slevin, 1993; Wiklund, 1999; Wiklund & Shepherd, 2003, 2005; Zahra & Covin, 1995). However, referring to Hughes and Morgan (2007; see also Hughes et al., 2017) and others, this leads to neglecting the individual impact of each dimension as it works on the assumption of a universal and uniform impact of all dimensions. Consequently, and motivated by these studies aims, the multidimensional perspective will find consideration within the following. Further justification for this decision will be provided throughout later sections.

According to the multidimensional view that adds autonomy and competitive aggressiveness (Lumpkin & Dess, 1996), each dimension can vary independently and may (or may not) favour business performance at a specific point in time considering a certain firm context (Hughes & Morgan, 2007; Kreiser et al., 2002; Rauch et al, 2009; Shirokova et al., 2016; Stetz et al., 2000). Hence, not all dimensions would be beneficial and might not even be directly or positively related to a firm's performance due to different circumstantial and situational contexts (Kraus, Rigtering, Hughes, & Hosman, 2012). To date, only a few studies have considered the multidimensional perspective (also refer to Schueler et al., 2018). While most works have not debated the variation of each dimension with respect to the others, they continue to operate on the assumptive link between uniform high levels of each dimension and a firm's overall positive performance (Covin, Green, & Slevin, 2006). Thus, to understand the actual linkage of EO and performance, here, each dimension is suggested to receive an independent assessment. Moreover, Schueler et al. (2018) concluded that the multidimensional perspective allows theorists to receive much more fine-grained conclusions as evidenced by the dimensions of EO being differently related to various performance outcomes.

Within their study, Lumpkin and Dess (1996) have described the nature of the EO construct – methods, practices, and decision-making processes that top-level managers use to act successfully – and have proposed a conceptual framework to examine the relationship between EO and an organisation's performance; this is accomplished as follows in Figure 1.

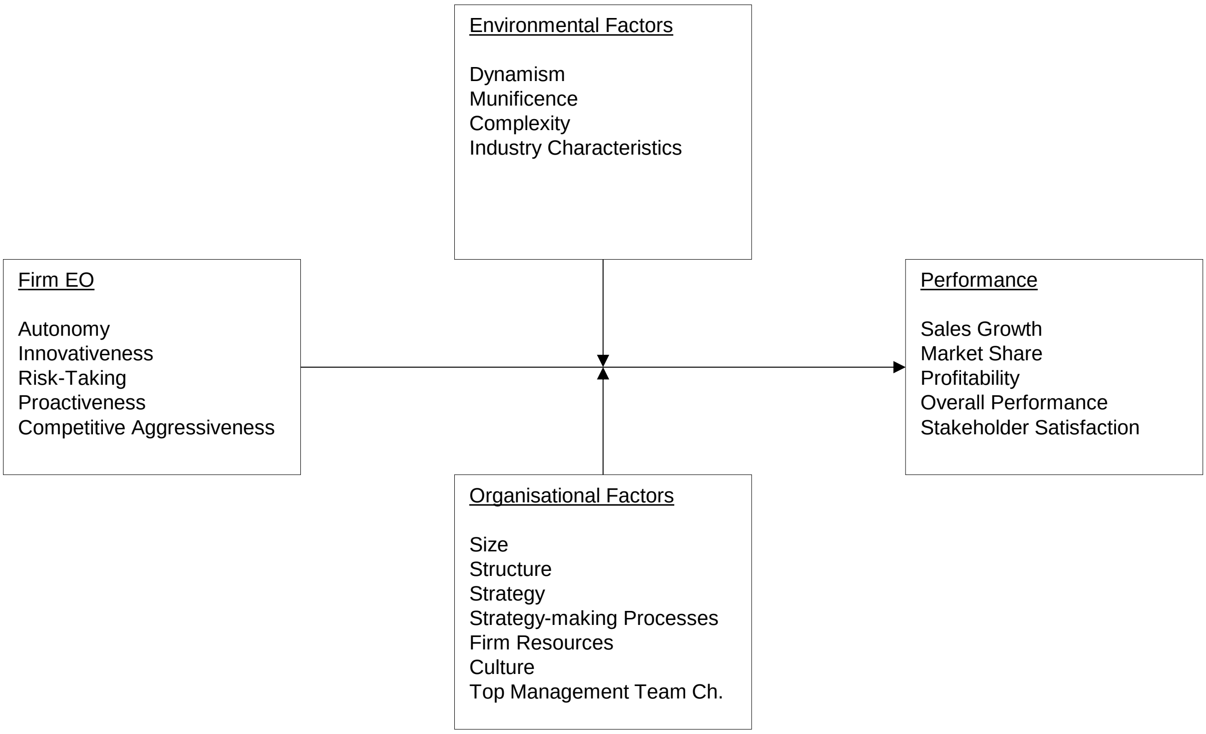


Figure 1: The Unidimensional versus Multidimensional Perspective: Multidimensional Perspective of EO: Conceptual Framework (Source: Lumpkin & Dess, 1996)

With time, firms may change while the nature of their EO may or may not remain stable (Lumpkin & Dess, 1996). Hence, the age, size, and structure of a firm (Organisational Factors) and its environmental dynamism, munificence, complexity, and industry characteristics (Environmental Factors) could determine its strategic and marketing needs. While young firms may develop a dependence on innovativeness and risk-taking, mature ones may require a higher level of autonomy to achieve a certain performance level (Firm EO) (Hughes & Morgan, 2007). Apart from individual studies, it remains largely undefined as to how the various dimensions can be mapped onto business performance (Hughes & Morgan, 2007), especially considering individual performance measures and not an overall one (Gupta et al., 2017). According to general reports, some scholars agree that either some or all five dimensions are linked to generating a positive relationship impact (e.g., Wiklund, 1999; Wiklund & Shepherd, 2003, 2005; Zahra, 1991; Zahra & Covin, 1995). See section 2.4 for further exploration.

The previous research relies on measurements to study how organisations process an entrepreneurial firm strategy to perform better than their competitors who may be employing more conservative ideas (Gupta, Dobratz, & Gupta, 2014). Consequently, they could be relying on either the unidimensional or multidimensional perspective. Referring to Covin and Wales' measurement of EO (2012), EO exists as a latent construct even apart from its measurements. Principally, researchers would be free to choose any approach that serves their study's purpose best. However, this choice merely depends on the different assumptions that are carried per perspective such as through different implications for the conceptualisation, measurement, development, and accumulation of knowledge.

The impact of EO on performance has left literature with inconsistent answers as there are indications for the further scope of research regarding both the three uni- (Miller, 1983) and five multi-dimensions (Lumpkin & Dess, 1996; see also Gupta & Wales, 2017). Scholars have observed a positive association between EO and performance (such as Wiklund, 1999; Wiklund & Shepherd, 2003, 2005; Zahra, 1991; Zahra & Covin, 1995) as well as exceptions to these (such as Hart, 1992; Matsuno, Mentzer, & Özsomer, 2002; Morgan & Strong, 2003; Slevin & Covin, 1990; Smart & Conant, 1994). A study on EO literature has discovered that nearly 80% of published articles use Covin and Slevin's (1989) unidimensional conceptualisation (Wales, Gupta, & Moussa, 2013). Whereas recent theorising proposes that both predominant conceptualisations can co-exist (Covin & Lumpkin, 2011; Covin & Wales, 2012; Miller, 2011), George and Marino (2011) suggest the need to advance the knowledge base of EO by including the three dimensions and also incorporating Lumpkin and Dess' (1996) approach. Researchers could employ their ability to build on earlier studies to maintain and refine the applicability of definitions and conceptualisations of EO and not by redefining those (George & Marino 2011). Ideally, research could be undertaken to add additional characteristics or adjust dimensions of EO to map its theories to suit particular firm contexts (George & Marino 2011; Wales, 2016).

These perspectives are advanced by Covin and Lumpkin's (2011) suggestions of EO being a high potential research space wherein an expansion into additional dimensions (Covin & Miller, 2014) or an in-depth analysis of particular concepts and/or industries may be beneficial towards the overall management research (Morris et al., 2011). In this respect, George and Marino (2011) relate EO to a 'family' construction as per which the five dimensions represent the core that all prospective studies should include to foster a certain level of conceptual stability (see Wales, 2016). Thus, building on an overall conceptual and dimensional core, the five multi-dimensions will be investigated within the following.

2.3.1. Innovativeness

From a business perspective, there are several reasons for an organisation to behave in an entrepreneurial manner while balancing its priorities within industry-specific settings. In regard to this, firms that are not innovative may secede market share to competitors, lose well-educated staff, or continue to operate uneconomically (Wales, 2016). Lumpkin and Dess (1996) determine this be categorised under innovativeness as one of five dimensions that correlate towards the construction of a healthy EO. A majority of early and recent works on the EO-performance linkage have integrated innovativeness as a dimension. These include Miller (1983), Zahra (1991), Zahra and Covin (1995), Hughes et al. (2017), and Schueler et al. (2018).

The Oxford Dictionary defines innovativeness as the asset of featuring new methods that are advanced and original, introducing something new to the market (Oxford, 2016). Within EO research, the term is described more scrupulously as it may explain technological leadership or changes in product lines to target industry-specific needs (Schillo, 2011). Lumpkin and Dess (1996) outline corporate innovativeness as a firm's tendency to engage and invest in experimental ideas and original practices. On a firm-level, Schumpeter (1942) suggests an economical process of creative destruction through innovative products/services within existing markets where resources of one firm are shifted to another to grow latterly; thereby, resulting in the production of wealth (Kraus et al., 2012). Hence, an innovative firm is regarded as one that exploits existing or new and novel links within the market and industry settings that may drive economic changes (Schumpeter, 1934). Such changes appear with different levels of radicalness, but generally, all organisations would have a certain degree of readiness (Hage, 1980) to proceed from current firm settings (Kimberly, 1981; Wales, 2016).

According to an early definition of Downs and Mohr (1976), there are multiple ways to differentiate innovations in industry-related settings. The most beneficial ones are, firstly, product-market innovations such as creative product design, market research, and marketing (Miller & Friesen, 1978; Scherer, 1980); secondly, there are technological innovations such as original product and process improvements, research and development as well as any other outstanding technological or industrial awareness (Cooper, 1979; Lumpkin & Dess, 1996; Maidique & Patch, 1982).

Researchers have presented various methods to determine a firm’s innovativeness and its impact on a firm’s performance. Karagozoglu and Brown (1988) measure original answers to a firm’s internal modifications based on expenses and the number of employees working in R&D. Miller (1987) suggests a similar approach of analysing the costs for R&D in comparison to the percentage of sales. From an HR perspective, Hage (1980) suggests, the more professionals and specialists are employed in a firm, the higher would be its innovativeness quotient. The quantity of new products/services regarding introductions and regularity of alterations may vary from industry to industry. Nevertheless, the number of financials committed to HR or R&D might be helpful to operationalise the level of innovation within a firm (Covin & Slevin, 1989; Miller & Friesen, 1982).

Most researchers aim their studies at specifying product-market methods (Miller, 1983). According to Miller and Friesen (1982), higher levels of an organisation’s innovativeness would be related to superior confidence in technologically qualified experts. This view is similar to Zahra and Covin (1993), who emphasise an organisation's internal policy of being committed towards steady development and deployment of technology while growing their reputation through novel methods. Consequently, there was drawn a clear link between the dimension of innovativeness and a firm's performance (Lumpkin & Dess, 1996). This link in conjunction with a firms EO, will be further explored in section 2.4.

2.3.2. Risk-Taking

Any firm may face either individual-employee or firm-level risks at a certain point in time when its management – if implemented and executed optimally – can limit their potentially caused losses (Banks & Dunn, 2004). Lumpkin and Dess (1996) determine this as risk-taking – one of the five pivotal dimensions of the EO construct. A majority of recent works on the EO-performance linkage have integrated risk-taking as a dimension such as Miller (1983), Zahra (1991), Zahra and Covin (1995), Hughes and Morgan (2007), Hughes et al. (2017), and Schueler et al. (2018).

Referring to the Oxford Dictionary (2016), risk-taking is elucidated as taking decisions with a relatively uncertain outcome. The general definition of the term considers it to be the risk undertaken by an individual. However, this dimension has broadly been applied to firms through the various studies performed on the subject of EO. Therefore, since managers' decisions may affect a significant number of resources and projects either positively or negatively, these are among the many actions that are classified as risky behaviour (Schillo, 2011).

Within EO, Lumpkin and Dess (1996) suggest that every firm is involved in risk-taking to a certain degree. As stated, according to behavioural research, being entrepreneurial within an organisation means to work for oneself instead of working for someone else (Cantillon, 1734;

Shane, 1994b). Hence, the personal risk is considered to be a principal factor when making decisions, at the top-level management also (Cantillon, 1734). In this regard, Baird and Thomas (1985) identify three main reasons for such behaviour. Firstly, the individual, social, and psychological risks that accompany decisions with an uncertain outcome (Gasse, 1982); secondly, committing to an excessive amount of assets; and thirdly, borrowing greatly.

Early researchers have presented various methods to measure a firm's risk-taking endeavours. Brockhaus (1980) describes 'risk propensity' as the perceived accountability of a receivable reward linked to the positive result of an uncertain situation. He does so by using choice dilemma questionnaires for assessing risky preferences by offering the option to choose either a safe or a risky but more appealing alternative (based on Kogan & Wallach, 1964). Sitkin and Pablo (1992) introduce a model on risk-taking behaviour that differentiates between risk perceptions and preferences that are mediated through propensity. It is argued that the 'general desire to avoid or pursue risks' – such as risk preferences – would not define explicit risky behaviours but would moderately impact the probability of behaving in a more or less risky manner – such as risk propensity. Other scholars include the manner in which risk-taking issues are outlined (Kahneman & Tversky, 1979), the outcomes of previously undertaken risky ventures (Thaler & Johnson, 1990), and the ability to work within risky situations (Slovic et al., 1980).

Scholars have already described multiple patterns of risk-taking and its effects on EO and firm performance due to irregularities in the reported risk-taking propensities at the firm-level and the relationship of risk-taking patterns (e.g., Begley & Boyd, 1987; Schueler et al., 2018). In many cases, an organisation or business unit as a whole has to approve the decision to undertake perilous behaviour arising out of new opportunities, consequently, undertaking risks an individual would not take. As per numerous studies, there may remain a tendency of risk-taking being beneficial towards a firm's performance, which will be further examined in section 2.4.

2.3.3. Proactiveness

Concerning EO, senior managers tend to act entrepreneurial as they are required to secure a firm's growth through the implementation of visions (Penrose 1959). In this regard, Lieberman and Montgomery (1988) suggest the first-mover advantage that may generate above-average profits and brand recognition. Lumpkin and Dess (1996) determine this as proactiveness – one of the five dimensions of EO. A majority of recent works on the EO-performance linkage have integrated proactiveness as a dimension, such as Miller (1983), Zahra (1991), Zahra and Covin (1995), Hughes and Morgan (2007), Hughes et al. (2017), and Schueler et al. (2018).

The Oxford Dictionary defines proactiveness as creating or controlling a current or future situation rather than responding to it after it took place (Oxford, 2016). It is described as a characteristic of entrepreneurial activities to define opportunities in terms of product/service, customer, and market or industry demands (Schillo, 2011). According to Lumpkin and Dess (1996), proactiveness becomes crucial within EO as it is a forward-thinking strategic orientation corresponding with innovative and risky actions. This dimension refers to the processes targeted to future issues and needs while seeking novel opportunities across any firm development stage (Venkatraman, 1989). Venkatraman (1989) equalises proactive organisations with being leaders rather than followers where the quickest firm may introduce new products/services with the greatest returns into the industry (Miller & Friesen, 1982).

Proactiveness and competitive aggressiveness are often used simultaneously (Covin & Slevin, 1989). Lumpkin and Dess (1996) suggest a clear distinction between both. According to this, proactiveness relates to an organisation seeking opportunities when entering markets through taking initiatives and opportunistically evolving steps. This is aimed at moulding the environment to affect trends and generate demand thereby increasing the value of the organisation/enterprise. Competitive aggressiveness, however, relates to a firm's competitors and how the organisation answers the sought-after trends of the market (Lumpkin & Dess, 1996), thereby, contending for demands. This idea is similar to the theory of Porter's Five Forces (Porter, 2008).

Lumpkin and Dess (1996) describe the conceptual opposite of proactiveness as passiveness – rather than reactiveness – which refers to the indifference and inability to create opportunities that would allow an organisation to lead the market or industry. Contrastingly, reactiveness would be the ability to respond to competitors, which would have a similar positive tenor to that of proactiveness. Where proactiveness requires an initiative to create an advantageous environment for the firm, responsiveness requires firms to be adaptive towards their competitors. Hence, Chen and Hambrick (1995) advise firms to acquire a balance between both the traits.

Lumpkin and Dess (1996) point out that scholars have operationalised proactiveness at the firm-level when interviewing managers on an organisation's tendency to lead, develop, and introduce new products/services, or technologies (such as Covin & Slevin, 1989; Miller, 1983). Hence, proactiveness may be also closely linked to a firm's innovativeness. Moreover, there may be the tendency of proactiveness to be beneficial towards a firm's performance, which will be further examined in section 2.4.

2.3.4. Autonomy

Within the last few decades of EO research, it has been noted that independently-thinking top-level employees are more likely to establish useful business ideas within the firm (Chesbrough, 2006). Lumpkin and Dess (1996) identify this as autonomy – one of the five dimensions within EO. However, only some recent studies based on the EO-performance linkage have integrated autonomy as a dimension; these include Monsen (2005), Hughes and Morgan (2007), Hughes et al. (2017), and Schueler et al. (2018).

The Oxford Dictionary defines autonomy as one enjoying the freedom from external control or influence, synonymously used with independence (Oxford, 2016). Lumpkin and Dess (1996) have advanced this definition such that the term refers to independent entrepreneurial actions of individuals, teams, or organisations as a whole by, firstly, defining an idea or vision and, secondly, implementing it in a committed manner. Within these entrepreneurial processes that are defined by actions, the organisational actors are permitted and supported by the firm to perform autonomously and make critical decisions of their own accord (Lumpkin & Dess, 1996).

Early literature has defined two distinct contexts of the role of autonomous behaviour within the entrepreneurial strategic decision-making processes. Firstly, Mintzberg (1973) and Mintzberg and Waters (1985) suggest a mode wherein the organisation's risky tasks can be led by solid leaders. Much akin to the defined 'command mode' by Hart (1992) and Bourgeois and Brodwin (1984), according to which entrepreneurial actions are characterised by a central vision and solid management. Such abilities are described as autocratic behaviour within EO literature (Shrivastava & Grant, 1985) – this refers to a manager's ability to impact an organisational vision by the control of particular activities (Mintzberg & Waters, 1985). On the other hand, Hart (1992) suggests an integrative framework with 'generative mode' as per which any strategic decision-making concept and improvement may be processed from any entrepreneurial individual within the organisation ranging up to the top-management level. This accompanies Bourgeois and Brodwin's (1984) 'crescive mode' as per which strategic indications are developed by an individual's EO as input from non-managerial employees (Bower, 1970). Both contexts crucially require the dimension of autonomy.

The level of autonomy varies based on firm size and the style of leadership or ownership (refer to Lumpkin and Dess, 1996). According to Miller (1983), entrepreneurial firms are more likely to employ autonomously acting leaders – a theory which has been supported by Shrivastava and Grant's (1985) early studies on managerial autocracy. Firms are likely to encourage intrapreneurship (Pinchot, 1985) where the organisational structure is under change by flattening ladders and to assign authority to different organisational units to strengthen autonomy (refer also to Kreiser & David, 2010). Moreover, a link has also been observed of autonomy being beneficial towards business performance, which will be studied in section 2.4.

2.3.5. Competitive Aggressiveness

Established firms behaving in an entrepreneurial manner are more likely to persist in the market than their industry start-up counterparts (Covin & Miles, 1999). Researchers have studied the importance of competitiveness towards a firm's ability to sustain and secure long-term organisational success (such as MacMillan, 1982; Porter, 1985). Lumpkin and Dess (1996) determine this to be competitive aggressiveness, one of the five pivotal dimensions of the EO construct. According to Dean (1993), competitive aggressiveness is regarded as highly relevant within the context of EO as it would explain more variance in corporate entrepreneurship than any other strategic orientation concept (37%). Only some recent works on the EO-performance linkage have integrated competitive aggressiveness as a dimension; this includes Hughes and Morgan (2007), Hughes et al. (2017), Lumpkin and Dess (2001), and Schueler et al. (2018).

The term competitive aggressiveness describes the way a firm engages with competitors while differentiating themselves from firms that attempt to limit direct competition and those that actively and aggressively enter the competitor's market (Schillo, 2011). Lumpkin and Dess (1996) summarise competitive aggressiveness as an organisation's ability to challenge competitors actively. This ability may be accomplished to enter a market or to improve an industry prominence by outpacing rivals. It is characterised by the direct confrontation of firms – also known as a firm's responsiveness.

Lumpkin and Dess (1996) define three possibilities of a firm's required willingness to act and compete that are more unconventional than traditional ones. Firstly, a firm may analyse and target a contestant's weaknesses (MacMillan & Jones, 1984). Secondly, industry leaders may be challenged by exhibiting unconventional and exceptional strategic tactics (Cooper et al., 1986), and, thirdly, a firm may concentrate on products/services that add greater value than others while being flexible with their expenditures (Woo & Cooper, 1981). In this regard, Porter (1985) defines the three approaches of aggressiveness as performing certain aspects differently, changing the context, and outspending industry leaders. More recently, in a paper on EO in multinational corporations by Williams and Lee (2009), based on combining R&D and asset growth investment intensities, three types of entrepreneurial stance were defined: conservative, aggressive-asset growth, and balanced that could be mapped to this dimension.

Early measures of a firm's competitive aggressiveness suggest different approaches. Covin and Covin (1990) have interviewed managers exhibiting competitor aggressive leadership strategies as well as those who chose not to concentrate on competitors, but internal challenges. Venkatraman (1989) suggests measuring dedicated activities, for example ambitious aims of firms to increase the value of their market-shares and the stages to accomplish such, such as by giving up gains or lowering prices. This perspective could be advanced by analysing a firm's aggressiveness in marketing or product/service quality-improvement spendings (MacMillan & Day, 1987), including the speed of adopting new ideas. As stated by Miller and Camp (1985), an aggressively acting firm is more likely to be successful of its own accord when it does not take competitors' quantity, size, or existing products and market shares into consideration. Furthermore, there may be the tendency of competitive aggressiveness being beneficial towards a firm's performance, which will be studied in section 2.4.

Ultimately, as per the multidimensional view, it is assumed that autonomy, innovativeness, risk-taking, proactiveness, and competitive aggressiveness, being independently treated dimensions of an EO, may vary in a given context and may contribute towards a firm's performance (Lumpkin & Dess, 1996). As outlined throughout the previous sections, due to a firm's and study's specific context, this is more complex than often depicted. Thus, a deeper understanding of how the multi-dimensions may benefit a firm's performance is required; especially when considering the possible causes of deviance in the EO-performance relationship (see section 2.4.3).

2.4. EO and its Impact on Firm Performance – A Deeper Understanding

Firms, whether established or young, have to persist in various and complex industry and market structures within steadily evolving or even undefined environments (Dreyer & Grønhaug, 2004; Rosenbusch et al., 2013; Slater & Olson, 2002). To address this, the relevance of entrepreneurial behaviour within firms towards strategic management and its literature, primarily through EO, has found early traction and acceptance among a great number of scholars (Andrews, 1971; Chandler, 1962; Covin & Slevin, 1990; Schendel & Hofer, 1979). Entrepreneurial challenges arise from product or services-market relationships and resource obligations (Lumpkin & Dess, 1996; Miles et al., 1978), wherein strategic management attempts to solve those with firm activities driven by certain management processes and decisions (Lumpkin & Dess, 1996). When aiming for increased performance, entrepreneurial success was repeatedly associated with a high level of EO (see also discussions of Collins & Moore, 1970; Covin & Slevin, 1991; Covin & Wales, 2018; Lumpkin & Dess, 1996; Peters & Waterman, 1982; Schollhammer, 1982; Schueler, 2018; Zahra, 1993). This section will outline the differing evolution of research on the linkage of EO and performance.

As summarised by Kraus et al. (2012) and Wales et al. (2013), most studies on EO have been conducted in the USA until 2000. Later, EO research expanded to Slovenia (Antoncic & Hisrich, 2001, 2004; Antonci, 2006), Netherlands (Kemelgor, 2002; Stam & Elfring, 2008), South Africa (Goosen et al., 2002), Sweden (Wiklund & Shepherd, 2003, 2005), Vietnam and Thailand (Swierczek & Ha, 2003), Greece (Dimitratos et al., 2004), China (Chen et al., 2005), Finland (Jantunen et al., 2005), Germany (Walter et al., 2006), Turkey (Kaya, 2006), and the United Kingdom (Hughes & Morgan, 2007). The linkage of EO and performance has found strong consideration throughout the past years. There have been positive EO-performance associations (e.g., Wiklund, 1999; Wiklund & Shepherd, 2003, 2005; Zahra, 1991; Zahra & Covin, 1995; Rauch et al., 2009) as well as exceptions to these (e.g., Covin & Slevin, 1990; Hart, 1992; Hughes & Morgan, 2007; Hughes et al., 2017; Mentzer, & Özsomer, 2002; Morgan & Strong, 2003; Smart & Conant, 1994). As part of this study, the following two tables have been developed that collect and examine the evolvement of the EO-performance linkage within selected scholarly works over time. These selections merely focus on key papers relevant for this thesis. Table 2 summarises research on a universal and possible positive EO-performance impact whereas Table 3 displays works based on an independent factor driven linkage.

During the 80's and 90's, EO research focused on its conceptualisation including early markers of performance. Even though Miller (1983) never used the term 'Entrepreneurial Orientation' itself (referring instead to 'firm entrepreneurship'), he has admitted to having studied entrepreneurship in a firm and its impact on performance initially by defining the three uni-dimensions of innovativeness, risk-taking, and proactiveness (Miller, 2011). This understanding was advanced by Covin and Slevin (1990) who have researched strategic postures, structural forms, and performance levels of new ventures in the three different industry settings of emerging, growing, and mature industries. As stated previously, Lumpkin and Dess' work (1996) eventually defined EO as decision-making styles, processes, and techniques that build upon firms' activities and transform the unidimensional view of EO into a multidimensional one. Following that, Wiklund and Shepherd (2003, 2005) described EO to a greater extent as a form of strategic orientation. In the late 2000s, Rauch et al.'s (2009) meta-analytical research uncovered newer insights on EO that will be delved into later. From

2010 onwards, and largely motivated by Rauch et al.'s (2009) conclusions, EO-based literature has seen a shift towards the rising demands of understanding the underlying 'black box' of EO (Covin & Wales, 2018; Wales et al., 2011); respectively how and why EO impacts performance.

As presented along with the Tables 2 and 3, the resulting EO-performance impact throughout previous research varies greatly (displayed are major scholarly works when preparing this literature review were captured), especially considering the two approaches of uni- versus multidimensional. This variation is seen in terms of their applied study approach, dimensionality, organisational, and environmental factors as well as through the considered economic situation, and vertical, horizontal, and temporal dimensionality. In addition to displaying this information within both tables, a summary of key findings on the performance outcomes per scholarly work is presented. A majority of these studies will find due consideration within the following sections of this thesis.

Table 2: EO Impacting Performance: Previous Studies on a Universal EO-Performance Linkage

Dimensionality incl. other approaches	EO-Performance Causality	Organisational Factors	Environmental Factors	Economic Situation & Environmental Circumstances	Vertical Dimension	Horizontal Dimension	Temporal Dimension	Key Findings
Miller (1983): Universal/Unidimensional Approach using Questionnaires (Quantitative)								
unidimensional; dimensions: innovativeness, risk-taking, proactiveness; incl. contingency (possible Moderating-Effects Model)	entrepr.-performance linkage	firm types/size: simple, planning, organic	environment: dynamism, heterogeneity, hostility	not specified	top-management level	organisation/ structure: scanning, controls, communication, resources, centralisation, technocatisat., differentiation, integration; strategy/decision making: analysis, futurity, explicitness of product-market, strategy, strategic integration	no	prior research: EO is considered to be driven by the personality factors of leadership, structure of firm, and strategy making 1. derived three firm types from previous literature 2. simple firm's entrepreneurship is driven by leader characteristics; planning firms facilitated by explicit product/marketing strategies; organic firms as function of environment and structure -> higher level of entrepreneurship would result in increased performance
Zahra (1991): Universal/Unidimensional Approach using Questionnaires (Quantitative)								
unidimensional; dimensions: innovativeness, risk-taking, proactiveness	corporate entrepr.-performance linkage; performance indicator: perceived and archival financial performance	firm size: large companies	environment: dynamism, heterogeneity, hostility; industry: relevant to any	not specified	not specified	structure: communication, scanning, integration, differentiation, control; strategy: growth, stability	longitudinal, three years	little research on association of corporate entrepreneurship with performance 1. proposes a model that identifies potential environmental, strategic, organisational factors with the following results 2. environmental dynamism, hostility, heterogeneity intensify corporate entrepreneurship 3. growth-oriented strategies are associated with increased corporate entrepreneurship, whereas strategy of stability is not conducive to it 4. scanning, formal communication, integration components of formal firm structures positively related to corporate entrepreneurship 5. clearly defined firm values positively related to corporate entrepreneurship 6. corporate entrepreneurship activities associated with a firm's financial performance and reduced systematic risk -> higher level of entrepreneurship would result in increased performance

Zahra & Covin (1995): Universal/Unidimensional Approach using Primary and Secondary Source (Quantitative)

unidimensional	corporate entrepr.-performance linkage	24 medium-sized manufacturing firms representing 14 industry segments, 39 chemical companies, & 45 Fortune 500 industrial firms representing 5 industry segments	environment: hostility	not specified	not specified	not specified	longitudinal, seven years	previous studies on corporate entrepreneurship-linkage mostly short-term 1. corporate entrepreneurship has positive impact on financial measures of firm performance 2. this effect tends to be modest over first few years, increases over time, suggesting that corporate entrepreneurship may generally be effective towards improved long-term financial performance

Wiklund & Shepherd (2005): Universal/Unidimensional Approach using Phone Interviews (Qualitative) and Questionnaires (Quantitative)

unidimensional; dimensions: innovativeness, risk-taking, proactiveness; configurational approach; control variables: firm age, size, industry	EO-performance study based on configuration; moderator of environment dynamic; performance indicator: perceived financial performance	firm size: internal factors of small businesses	environment: dynamism; industry: four sectors (knowledge-intensive manufacturing, labour-intensive manufacturing, professional services, and retail)	not specified	not specified	not specified	not specified	strategy and entrepreneurship literature suggest that EO improves firm performance, but empirical results are mixed 1. suggest that a main-effect-only analysis would illustrate a partial performance explanation only (two-way interactions) 2. propose a relevance of capital access and dynamic environments 3. a three-way interaction model, so-called configurational approach, would explain variances towards the performance linkage (Wiklund & Shepherd, 2005) 4. a positive EO impact on business performance of small businesses has been confirmed 5. Wiklund and Shepherd have concluded that EO may sometimes but not always contribute towards improved business outcomes (Wiklund & Shepherd, 2005) -> higher level of EO may result in increased performance but not always

Rauch et al. (2009): Universal/Unidimensional Approach using a Meta-Analysis

unidimensional; dimensions: innovativeness, risk-taking, proactiveness; notion of 2 possible additional dimensions as well as multi-dimensional approach	first meta-analysis on the relationship of EO and business performance; three moderators of national culture (respective continents), firm size, and industrial, technological intensity	relevant to any (see key findings)	industry: high-tech versus non-high-tech	relevant to any (see key findings)	relevant to any (see key findings)	relevant to any (see key findings)	recommended	1. A positive relationship of EO towards performance appears not to be homogenous, wherein likely moderators and firm contexts may determine how EO impacts performance 2. have found empirical ground for company size, industry, and culture as being moderately large impactors towards business performance + notion that additional moderators should be assessed 3. EO has been identified to be of higher significance for micro than for small businesses; wherein large firms scored between the previous two 4. EO appears to be more relevant towards high-tech rather than non-high-tech industries 5. while using continents as proxy for culture, Rauch et al. (2009) have not found significant differences -> moderately high correlation of EO with performance

Table 3: EO Impacting Performance: Previous Studies on an Independent EO-Performance Linkage

Dimensionality incl. other approaches	EO-Performance Causality	Organisational Factors	Environmental Factors	Economic Situation & Environmental Circumstances	Vertical Dimension	Horizontal Dimension	Temporal Dimension	Key Findings
Covin & Slevin (1990): Universal/Unidimensional Approach using an Email-Survey (Quantitative)								
unidimensional; dimensions: innovativeness, risk-taking, proactiveness; configurational approach	investigated a first performance impact by level of 'fit' between strategic posture, firm structure, and industry lifecycle; performance indicator: perceived financial performance	firm stage: new ventures; firm types/size: micro and small company (majority small company)	industry: emerging, growing, and mature industries	not specified	managers	strategic fit & firm structural forms	no	1. strategic posture including the firm's structure varies significantly across the industry lifecycle 2. ventures of emerging industries have the highest level of entrepreneurial strategic postures as well as most organic organisational structures 3. strength of linkage between new ventures and performance is moderated by the industry lifecycle 4. associations of business performance and strategic postures were less positive in mature industries than in emerging industries among new ventures -> possible performance may be affected differently
Hart (1992): Independent/Multidimensional Approach outlining a Conceptualisation								
multidimensional based on strategy-making modes	strategy-performance impact	firm size: small, medium-large, large; stage of firm development: rapid growth, steady growth, mature	complexity: simple (low-level), dynamic (velocity or radical change), stable (low degree of change), complex (many stakeholders), turbulent (dynamic and complex)	not specified	varying roles of top-level management & organisational members	strategic fit	no, recommended	most prior strategy making literature has focused on a limited set of themes (incomplete or overlapping) 1. offers integrative framework considering the 5 modes of command, symbolic, rational, transactive, generative 2. goes beyond existing strategy process models by contrasting roles and illustrating their interaction 3. strategy as an organisation wide phenomenon -> performance may be affected differently

Smart & Conant (1994): Universal/Unidimensional Approach using an Email-Survey (Quantitative)								
unidimensional; using multi-item scale based on integrative framework: propensity to take risks, tendency to engage in strategic planning activities, ability to identify customer needs, level of innovation, ability to create real visions, ability to identify new opportunities	EO & distinctive marketing competencies impact on performance; performance indicator: perceived financial performance	firm size: micro companies	industry: non-high-tech (apparel retailers)	not specified	various (599 independent business people)	strategic fit, job design	no	1. results indicate that EO is positively and significantly related to distinctive marketing competencies and organisational performance 2. demographic profiles of high, medium and low EO groups are also developed and provide additional insights -> possible performance may be affected differently by various dimensions
Lumpkin & Dess (1996): Independent/Multidimensional Approach outlining a Conceptualisation								
multidimensional (5 dimensions); incl. contingency	EO-performance impact contingent variables and configurations within EO; performance indicator: perceived financial performance	firm: relevant to any (dependent of size, structure, strategy, strategy-making processes, firm resources, culture, top management team characteristics)	industry: relevant to any (dependent of dynamism, munificence, complexity, industry characteristics)	not specified	any	any	no, recommended	1. clarify nature of EO construct and propose contingency framework for investigating EO-performance linkage 2. environmental factors (including industry) and/or organisational factors (including structural or managerial characteristics) may impact how a firm's EO is configured to accomplish high-performance outcomes -> independent dimensions 3. suggest alternative models for testing EO-performance relationship -> performance may be affected differently
Matsuno, Mentzer, & Özsomer (2002): Independent/Multidimensional Approach using detailed Firm Information (Quantitative)								
none	entrepreneurial proclivity impact on business performance	firm size	environmental consideration: market orientation	not specified	not specified	organisational structure: formalisation, centralisation, departmentalisation	longitudinal	prior literature suggests potential tension between market orientation and entrepreneurial proclivity in achieving superior business performance 1. investigates structural influences (direct and indirect) of entrepreneurial proclivity and market orientation on business performance -> performance may be affected differently; entrepreneurial proclivity has not only positive and direct relationship on market orientation but also indirect and positive effect on market orientation through reduction of departmentalisation & performance influence is positive when mediated by market orientation but negative or nonsignificant when not mediated by market orientation

Morgan & Strong (2003): Independent/Multidimensional Approach using an Email-Survey (Quantitative)

multidimensional; dimensions of: Aggressiv., Analysis, Defensiveness, Futurity, Proactiveness, Riskiness	strategy-performance impact; performance indicator: perceived financial and non-financial performance	firm size: medium and large (small firms excluded due to limited scope in strategic analysis)	industry: high technology, industrial manufacturing firms	not specified	not specified	strategic fit	no, recommended	little consensus on strategy-performance linkage 1. reports several critical reviews and meta-analysis that highlight limitation in current studies 2. provides empirical investigation of different sized firms 3. business strategy conceptualised as comparative construct with six dimensions: related to business performance -> performance may be affected differently

Hughes & Morgan (2007): Independent/Multidimensional Approach using an Email-Survey (Quantitative)

multidimensional (5 dimensions)	relevance to understand each dimension's value towards a secured performance and at what firm stage a dimension would be more vulnerable than others	firm stage: start-up phase	industry: IT-firms	not specified	top-management level	not specified	no, recommended	previous studies tend to study 3 uni-dimensions instead of 5 multi-dimensions 1. results foster the concerns made by Lumpkin and Dess (1996) as only Proactiveness and Innovativeness have positive impact on business performance; Risk-Taking has a negative relationship whereas Competitive Aggressiveness and Autonomy appear to have no impact on performance at an early firm stage at all 2. conclude, moreover, that an ad-hoc approach of an EO implementation of all dimensions is potentially damaging as it could lead to wastage of resources and unintended strategic decisions influencing the firm's performance negatively -> performance may be affected differently

Wales et al. (2011): Independent/Multidimensional Approach outlining a Conceptualisation

multidimensional: incl. vertical, horizontal, temporal; (possible Mediating-Effects Model)	EO-performance impact	not specified	not specified	not specified	vertically across hierarchy levels (top-level management, mid-level management, non-managerial employee)	horizontally across business units (Structure, Strategic Fit, Job Design)	temporal as firm develops	previous research has acknowledged that EO provides critical insights into questions of organisational-level strategy and performance, how EO manifests inside organisations has received little attention: EO-performance linkage is currently described as the 'black box' 1. examine EO not as homogeneous but how and why EO might pervade firms heterogeneously along dimensions: vertical, horizontal, temporal -> performance may be affected differently

Kraus, Rigtering, Hughes, & Hosman (2012): Independent/Multidimensional Approach using an Email-Survey (Quantitative)

multidimensional (3 dimensions); control variables: firm age, size, industry	EO-performance impact	firm size: small and medium sized	environmental consideration: based on economic situation; country: Netherlands	economic situation: global economic crisis	not specified	not specified	no, recommended	previous research has not answered what effect EO might have on business performance during periods of economic crises 1. results imply proactive firm behaviour to positively contribute towards SME performance in the economic crisis 2. Moreover, empirical evidence has found that innovative SMEs are better performers in turbulent, uncertain contexts; but such should reduce the internal level of risk -> performance may be affected differently

More recent empirical works by Wiklund and Shepherd (2003, 2005) study EO within small businesses and suggest that a main-effect-only analysis would merely illustrate a partial performance explanation (two-way interactions). They propose the relevance of capital access and dynamic environments. Hence, when combining those with EO, a three-way interaction model would explain variances towards the performance linkage (Wiklund & Shepherd, 2005). A positive EO impact on business performance of small firms has been confirmed in this context.

As Table 2 illustrates, there have been many scholars proposing and studying the general applicability of EO's impact on performance (see also Gupta & Wales, 2017); these include Miller (1983), Zahra (1991), and Zahra and Covin (1995). The studies delve into a high level of EO that would lead to a greater performance level. However, other studies have reported that the different levels of EO result in possible positive, negative, or neutral effects on performance. These works include Lumpkin and Dess (1996) and Rauch et al. (2009), as seen in Table 3. This perspective has been supported by Bhuian, Menguc, and Bell (2005), Miller and Friesen (1982) and Zahra (1993) according to which EO elevated beyond a certain level may be potentially harmful towards a firm's performance. A non-linearity in the form of an inverted U-shaped EO-performance relationship within Chinese ventures has been observed by Tang et al. as well (2008; see also Wales, 2016).

Considering independent effects of the EO-performance linkage, one of the main contributors in early EO research have been the works of Covin and Slevin (1988, 1989, 1990). They studied strategic postures, structural forms, and performance levels of new ventures[3] in the

[3] Even though firms may potentially grow through mergers and acquisitions, joint ventures, or strategic alliances too, previous research on firm-level entrepreneurship focusses primarily on internal venture expansions (Burgelman, 1983; Dess & Lumpkin, 2005) which is the focus of this thesis and a different level of analysis than the external view would require. Corporate new venture creation was named "intrapreneuring" as it relates to expanding entrepreneurial businesses within firms (Dess & Lumpkin, 2005). There have been some efforts on external corporate venturing such as the works of Keil (2002) who created two main elements of external venturing processes and Williams (2018) who presented a framework providing new perspectives on entrepreneurial venturing in an international context.

three settings of emerging, growing, and mature industries by using a unidimensional approach. The study's results (Covin & Slevin, 1990) indicate that, firstly, strategic posture, including the firm's structure, varies significantly across the industry's lifecycle. Secondly, ventures of emerging industries have the highest level of entrepreneurial strategic postures as well as most organic organisational structures. Thirdly, the strength of linkage between new ventures and performance is moderated by the industry lifecycle, and, fourthly, the associations of business performance and strategic postures are less positive in mature than among new ventures in emerging industries (refer also to Kreiser & David, 2010). Thus, even though using a unidimensional approach, Covin and Slevin (1990) provided the first examination of the impact on performance by the level of 'fit' between strategic posture, firm structure, and industry lifecycle thereby suggesting that a high level of EO does not invariably result in a higher business outcome.

This idea has been developed further by Lumpkin and Dess (1996). Within their study, Lumpkin and Dess (1996) presented a theoretical integrative framework[4] for exploring the linkage of EO and business performance without actually testing it, as is seen in Figure 2. They built a contingency theory to describe the relationship of key variables to the EO-performance linkage (see also Miller, 1988). Hence, environmental factors (including industry) and/or organisational factors (including structural or managerial characteristics) were suggested to be considered in understanding how a firm's EO dimensions may accomplish certain performance outcomes (Lumpkin & Dess, 1996). Within this multidimensional approach, specifically, Lumpkin and Dess (1996) theorised and argued that the dimensions of EO might have individual, let alone interdependent, effects on firm performance; furthermore, that their effects may or may not be positive and differ across different indicators of performance. Thus, dimensions of a firm's EO may have positive, negative, or neutral effects on various performance outcomes (see also Gupta & Wales, 2017). At the time, this notion

[4] For the ease of access to the reader this figure is displayed again (identical to Figure 1).

was new to EO research and was first tested empirically by Hughes and Morgan (2007). Section 2.4.1 will provide further insights into recent knowledge regarding the multidimensional linkage.

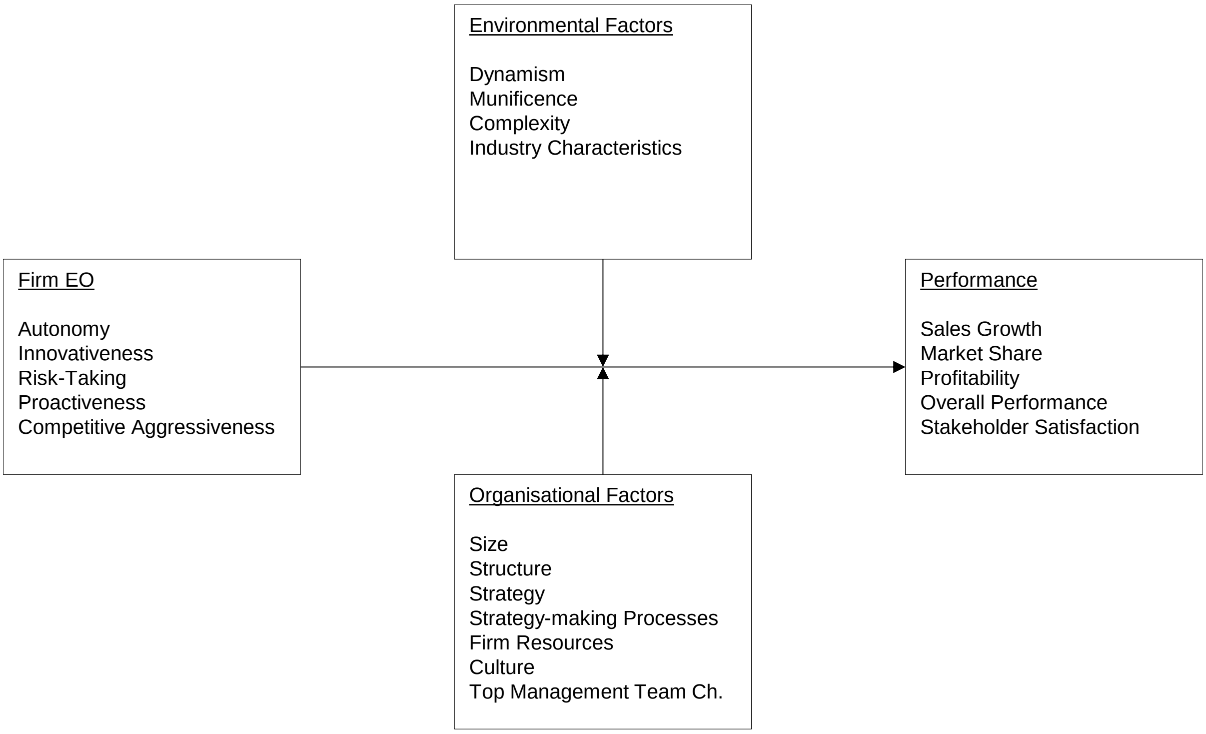


Figure 2: EO Impacting Performance: Conceptual Framework (Source: Lumpkin & Dess, 1996)

Rauch et al. (2009) have conducted the first meta-analysis on the relationship between EO and business performance, which goes beyond a qualitative assessment concluding with mixed results. Analysing 53 samples of 51 studies based on 14,259 companies, they have found a moderately high correlation of EO with performance. The positive linkage of such does not appear to be homogenous, instead, there are likely moderators and firm contexts that may determine how EO impacts performance (Rauch et al., 2009). This was noted by a small number of other scholars as well. I.e., Choi and Williams (2016) who suggest that the EO-performance linkage is impacted (in this case mediated not moderated) by a firm’s technology. Hence, advancing Lumpkin and Dess’ (1996) assumptions, the need for additional drivers of internal and environmental ones have been identified.

Rauch et al. (2009) have found empirical ground for company size, industry, and culture being relatively large influencers towards business performance. Moreover, firstly, EO was identified to be of higher significance for micro than for small businesses wherein large firms scored between the previous two. Secondly, EO appeared to be more relevant towards high-tech rather than non-high-tech/less-tech intensive industries. Thirdly, while using continents as a proxy for culture, Rauch et al. (2009) have not found substantial differences. Moreover, their results support the overall notion of EO having positive performance implications.

Conclusively, Covin and Slevin (1989) and Rauch et al. (2009), for example, have considered EO as a unidimensional construct wherein most of the studies have summed all dimensions to an overall score. Referring to the multidimensional perspective, within Rauch et al.'s meta-analysis, only 13 scholars have studied the independent impact of single dimensions on performance. In their paper, Rauch et al. (2009) have noted the two additional dimensions described by Lumpkin and Dess (1996) as possibly relevant towards performance measures. Yet, a low quantity of available multidimensional studies did not allow an integration of these into their research. Section 2.4.1 will provide greater details on current scholarly works investigating the multidimensional view of EO and mixed results on performance outcomes.

2.4.1. Recent Knowledge on the Multidimensional Linkage between EO, its Dimensions and Firm Performance

As indicated previously, research efforts have repeatedly aimed to explain an EO's linkage with business performance (Hughes & Morgan, 2007; Hughes et al., 2017; Schueler et al., 2018). Where Slater and Narver (2000) have found no significant relation, Swierczek and Ha (2003) have ascertained a partially positive linkage. Scholars have reported inconsistencies of the impact of EO on performance (Hughes & Morgan, 2007; see also Gupta & Wales, 2017), especially when considering a multi-dimensional perspective. In addition to those already discussed, there are a few other studies on the multidimensional EO-performance relationship as seen previously in Table 3. These are the works of Hart (1992), Matsuno, Mentzer, and Özsomer (2002), Morgan and Strong (2002), Hughes and Morgan (2007), Wales et al. (2011) and Kraus et al. (2012). This section will outline more recent knowledge regarding multidimensional studies based on the EO-performance linkage.

Within the firm practice of different available resources and capabilities in specific industry contexts, it may be of high relevance to understand each dimension's value towards a secured performance and at what firm stage a dimension would be more vulnerable than others (Hughes & Morgan, 2007). Lumpkin and Dess' (1996) approach reflects each dimension as individually variable that may or may not be valuable towards performance outcomes at different points in time. Consequently, all, none, or a subset of dimensions may be beneficial to business performance (Hughes & Morgan, 2007; Hughes et al., 2017). Until recently, this concern remained unnoticed and was disregarded by many scholars. Instead, partial analyses of either single dimensions or summative approaches that fail to explain the dimensions' unique impact on performance have become popular (Hughes & Morgan, 2007). Therefore, considering a study's as well as a firm's contexts, the unidimensional perspective disregards the individual dimension's influence on business performance and considers a universal level and certain generalisability of firm EO which is questionable.

One of the few recent works regarding the multidimensional approach is Hughes and Morgan's (2007) research (more recently Hughes et al., 2017) that examines the influence of the multi-dimensions on performance of IT firms in the start-up phase. Hughes and Morgan (2007) have suggested that not all EO dimensions have to be present or valuable as it depends on the organisation's situational context at the time. The study's results foster the concerns voiced by Lumpkin and Dess (1996) as only proactiveness and innovativeness have a positive impact on business performance, risk-taking has a negative relationship, whereas competitive aggressiveness and autonomy appear to have no impact on performance at an early firm stage at all. Hughes and Morgan (2007) conclude, moreover, that an ad-hoc approach of an

EO implementation of all dimensions is potentially damaging as it could lead to wastage of resources and unintended strategic decisions influencing the firm's performance negatively. Hence, either all dimensions or a subset may be of benefit to business performance whereas its development stage requires consideration.

Another study has investigated EO-performance effects from a multidimensional perspective by studying small and medium-sized firms during the current economic crisis (Kraus, Rigtering, Hughes, & Hosman, 2012). Its results imply proactive firm behaviour to contribute towards SME performance in the economic instability positively. Moreover, empirical evidence was found that innovative SMEs are better performers in turbulent, uncertain contexts; but such should reduce the internal level of risk (Kraus et al., 2012). Hence, there is further evidence that EO is context-driven; therefore, a universally beneficial impact on performance is to be challenged.

Wales et al. (2011) have made a similar statement as per which performance may be affected by each dimension individually. They acknowledge that EO would offer great insights into firm-level strategy and performance, however, how EO manifests within the firm has found little consideration in previous research. Similar was observed by more current works of Covin and Wales (2018), Wales (2016), and Schueler et al. (2018); with the latter study concluding that the multidimensional approach allows us to draw much more fine-grained conclusions than the unidimensional one. Back then, Wales et al. (2011) have described the EO-performance linkage as being a 'black box' and went on to study how EO pervades heterogeneously along contexts of vertical, horizontal, and temporal dimensions. See sections 2.5, 2.6, and 2.7 for further details. Ultimately, the multidimensional perspective has shown to be of value towards EO research in certain firm internal and environmental contexts; therefore, will be followed for further analyses within this thesis.

2.4.2. Contextual and Industrial Characteristics

Scholars have examined EO in selected populations, locations, cultures as well as firm settings (Zahra & Wright, 2011). Recent works have studied domestic entrepreneurship that expanded onto international considerations (McDougall & Oviatt, 2000; Zahra, 2005), transnational entrepreneurship (Drori et al., 2009), and entrepreneurship in emerging economies (Bruton, Ahlstrom, & Obloj, 2008). Increasingly, data from a variety of industries has been gathered (see Table 2, page 38 and Table 3, page 40) to help in understanding the nature of firm entrepreneurship, EO, and its possible linkage to performance in a particular setting (Zahra & Wright, 2011) (see Table 2, page 38). However, such studies have only rarely differentiated between entrepreneurial context, focussing on temporal, industry, spatial, ownership, or environmental characteristics (Zahra et al., 2014). For example, Rosenbusch et al. (2013) have stated that despite the importance of the external environment for business performance, only limited knowledge on the different mechanisms that allow firms to profit from specific environmental contexts exists. According to this, different industry perspectives require consideration as they appear to be vital impacting factors towards the EO-performance linkage.

2.4.2.1. The Importance of Contextual and Industry Characteristics

EO research has frequently reported that firm entrepreneurship and EO may vary in their nature and given contexts immensely; for example, through the market or industry pressures (Lumpkin & Dess, 1996; Miller, 2011; Zahra & Wright, 2011; Zahra, Wright, & Abdelgawad, 2014; Rosenbusch et al., 2013). A variety of aspects may simultaneously but heterogeneously impact EO and performance outcomes (Miller, 2011; Zahra et al., 2014), which is why research samples bearing richness of contexts are crucial (Gartner, 2008) such as a careful consideration of industry characteristics. Thus, the EO dimensions' levels may vary from firm to firm, industry to industry, and ultimately, from context to context. Here, industry characteristics refer to the differentiation of industry by type – such as firms within high-tech versus less-tech intensive industries – and by industry conditions – such as the organisational task environment.

2.4.2.2. Industry Types and Lifecycle Stages

As highlighted before, multiple researchers have urged scholars to distinguish between various environmental factors when studying EO-performance relationships contextually. Some scholars have studied firms of certain industrial categories such as high-technology based firms (Hughes & Morgan, 2007; Morgan & Strong, 2003), non-high-tech firms (Smart & Conant, 1994) or even both (Rauch et al., 2009). Others have considered lifecycle stages such as emerging, growing, and mature industries (Covin & Slevin, 1990; Hughes & Morgan, 2007; Lumpkin & Dess, 1996) or the proximity in time to an economic shift (Kraus et al., 2012).

According to Rauch et al.'s meta-analysis (2009), differences have been found between high-tech and non-high-tech/less-tech intensive firms in which there appears to be a stronger EO-performance linkage in the former industry group than in the latter. Other scholars have investigated specific industries. Choi and Williams (2016), as one of the few to incorporate a firm's technology activities as mediating effect into the EO-performance linkage, for example, found that a firm's technology action has a stronger mediating effect than marketing action in manufacturing industries. As per the notion of lifecycle stages, Covin and Slevin (1990) have reported that associations of business performance and strategic posture were less positive in mature industries than in the emerging ones. Nevertheless, apart from these individual findings, Miller (2011) has pointed out that a majority of scholars have failed to specialise their research into industries, industry lifecycles, or even countries/regions (refer to Bogatyreva et al., 2017), but have employed mixed samples instead such as Zahra and Covin, 1995, and Matsuno, Mentzer, and Özsomer, 2002.

2.4.2.3. Industry Conditions

Originally, the classification of industry conditions has been employed as a basis for operational definitions of both industrial and organisational task environments (OTE) (Dess & Beard, 1984) as well as for a majority of research questions in administrative disciplines (Aldrich, 1979; Dess & Beard, 1984; Dill, 1958; Emery & Trist, 1965; Harris, 2004; Lawrence & Lorsch, 1967; Starbuck, 1976; Thompson, 1967). OTE has associations to strategic management research, including implications for the top-level management such as on strategy, structure, and business performance (Goll & Rasheed, 1997; Harris, 2004; Magaji et al., 2017). There have been many calls for the industry conditions to be considered an essential contextual variable in EO research (Rosenbusch et al., 2013).

Initially, Dess and Beard (1984) have suggested the need to conceptualise and measure OTE along three industry dimensions. They have used Aldrich's (1979) codification of environmental dimensions and have proposed industry turbulence, munificence, and complexity to be of value for the definition of contextual industry conditions. These have been similarly conceptualised by other scholars as well (Jurkovich, 1974; Pfeffer & Salancik, 2003; Mintzberg, 1979; Rosenbusch et al., 2013; Scott, 1981), however, have only partly been studied within previous works on EO (refer to Table 2, page 38 and Table 3, page 40). Due to their importance for this research's aims, industry turbulence and munificence will find further consideration within the following.

Industry Condition of Turbulence

Industry dynamism or turbulence relates to the rate of stability or instability of the environment, which may evolve by the adaptions in customer preferences, the development of new products/services, the contesting of firms, or progressing of new technologies (Stoel & Muhanna, 2009). Emerging from the organisational theory that studied dynamism – turnover, nonappearance of patterns, and unpredictability have been predominantly associated with its measures (Dess & Beard, 1984). Also, the early works of Mites, Snow, and Pfeffer (1974) and Jurkovich (1974) have urged research to differentiate between the rate and unpredictability of environmental change.

According to OTE research, firms competing in dynamic industries are more likely to separate homogenous elements of their environments, which may qualify them to manage situations of ambiguity (Dess & Beard, 1984). Uncertainty may occur in various ways: it could manifest itself in changes of customer needs, shifts in the behaviour of competitors and suppliers, or as technical discontinuities (Rosenbusch et al., 2013). Hence, uncertainty ambiguity ascends from a lack of information on future events and their consequences as well as their responses to them (Rosenbusch et al., 2013). Firms may answer to these in the form of organisational strategies or tactics as buffering, collusion, long-term contracts, or vertical integration to create higher environmental predictability of the firm (Dess & Beard, 1984). Following this, task uncertainty would result in increased knowledge required by top-level managers to make the same decisions and actualise the same firm performance outcomes as with the existing predictability within the business (Dess & Beard, 1984).

Quick change and unpredictability of future events offer plenty of opportunities for firms such as through shifted demands that enable a firm to exploit different and new customer needs including technical discontinuities (Rosenbusch et al., 2013). In the meanwhile, in a dynamically changing environment of technological demand and competitor behaviour, current opportunities and resources may rapidly become obsolete (Rosenbusch et al., 2013). While dynamic opportunities create challenges for managerial decision making, firms that quickly explore and exploit these can outpace their competitors.

Moreover, firms being entrepreneurial will continuously expand or even alter their resource base which averts them from building inflexibilities within the firm (Rosenbusch et al., 2013). This is regarded as a dangerous condition for firms that operate in dynamic environmental settings. Thus, turbulent environments trigger an implementation of EO that empowers a certain degree of resource flexibility to reach viability within the firm (Rosenbusch et al., 2013).

Aldrich (1979) classified the transition of industry stability to instability as environmental turbulence that leads to externally driven changes, which may result in an even higher uncertainty of firms. Additionally, the interconnection among firms may lead to uncertain and unstable industry settings as changes would come from any direction without prior warning and could be of unforeseeable magnitude (Dess & Beard, 1984; Emery & Trist, 1965). Moreover, this makes the industry condition of turbulence an essential influencer when studying the EO-performance linkage.

Industry Condition of Munificence

Industry munificence refers to the extent to which an environment can support sustained growth (Aldrich, 1979; Rosenbusch et al., 2013; Starbucks, 1976). Mature or decreasing industries are categorised as being low on munificence with intense competition, price wars, including advantages for low-priced production (Stoel & Muhanna, 2009). On the other hand, industries with high munificence are said to have increasing demand and growing customer group (Stoel & Muhanna, 2009). Intuitively, firms target environments that may ease organisational growth and stability (Dess & Beard, 1984), which helps to save resource expenditures and knowledge for less promising periods. Firms use external relations to secure the flow of resources and find more munificent environments (Hirsch, 1975). In a recent work, Hughes et al. (2015) reasoned that EO is a resource-intensive activity. The authors evidenced that slack resource availability fuelled EO, but firm resources then needed to be replenished through networking activities for EO to affect firm performance positively. Hughes et al. (2015) did not consider the industry context of the firm in this equation, but it is apparent that firms in more munificent environments may benefit from higher levels of slack resources (because of their wider availability) and may have fewer difficulties in replenishing these stocks thereafter.

Munificence outlines the favourability of a firm's OTE in reference to the presence of opportunities and the availability of resources (Aldrich, 1979; Dess & Beard, 1984; Pfeffer & Salancik, 2003; Rosenbusch et al., 2013). According to Rosenbusch et al. (2013), the implementation of an EO supports a firm in decoding both of these facets of a munificent environment into enlarged financial firm performance. Present opportunities were associated with the loci of change, fast industry growth, and initial stages in the industry life-cycle stages (Rosenbusch et al., 2013; Shane 1994). Following OTE scholarly works, the industry lifecycle stages have been considered a key variable for defining the firm strategy and securing business performance (Hofer, 1975). Here, sales growth is said to be the principal determinant to an environment's munificence (Dess & Beard, 1984). Other strategy portfolio models include market growth as determinant with regards to long-term firm strategies such as the Boston Consulting Group's Business Portfolio Matrix (Hofer & Schendel, 1980). According to the early work of Ansoff (1965), for example, market growth would limit firms to extend their competitive standing as well as possibilities to increase their product/service offerings. Furthermore, the industry condition of munificence has repeatedly been reported as being the predictor of a firm's performance (Dess & Beard, 1984).

Ultimately, industry has repetitively been treated as the control variable or mediating variable (Choi & Williams, 2016), and not as a moderator variable (Rauch et al., 2009) – for greater insight, refer to Zahra and Wright (2011). In the few cases of studying a firm's multidimensional impact on performance moderated by industry, scholars have considered selected dimensions in each study through which they may explore only parts of the whole, such as Lumpkin & Dess (2001) or Kraus et al. (2012). Hence, industry considerations using a multidimensional approach remains a poorly understood phenomenon despite the critical importance of context in understanding the contingency-reliant relationships such as EO-performance.

2.4.3. Considerations that Might Cause Deviance in the EO-Performance Relationship

As initially discussed, referring to Lumpkin and Dess (1996), acting entrepreneurial may result in favourable, unfavourable, or mixed outcomes for a firm. For example, if intensive R&D investments are performed, it could benefit future performance outcomes in the long-term instead of showing a direct gain. Consequently, an immediate evaluation of firm performance may present negative outcomes. Research on single dimensions of a variety of firm types may lead to the misinterpretation of the EO-performance linkage. As a consequence, scholarly works are required to include multiple considerations with respect to studying the EO-performance relationship. In respect to this, not only various EO dimensions but also performance measures may be considered. Numerous considerations when measuring firm EO and performance, including their correlation, have been described throughout recent scholarly works (Rauch et al., 2009). A selection will be evaluated following this sub-section.

2.4.3.1. Considerations When Measuring EO

In EO research, the first point of measurement consideration would require the selection of a dimensional model as it has been evidenced to provide significant insights into firm-level EO (Lumpkin & Dess, 1996). Initially, Miller (1983) assessed entrepreneurship along the three unidimensional variables as a subset of the variables. These were intended to describe strategy-making processes as extracted from scholarly research of Khandwalla (1977), Mintzberg (1973), Collins and Moore (1970), Normann (1971), and Shapero (1975). Within his review, Miller (2011) acknowledged that entrepreneurial processes would manifest independently in various contexts; hence, like many other scholars (Rauch et al., 2009), Miller (2011) accepted Lumpkin and Dess' (1996) multidimensional approach as well. The higher value for this research of considering the multidimensional view over the unidimensional one has been stated in sections 2.3 and 2.4.1.

To embrace alternative measurement approaches, Wales (2016) suggested the use of computer-aided text analysis (CATA) that aids in investigating a firm's EO and possible business performance relation based on written firm discourses. As discussed by Short et al. (2009), CEOs of large firms communicate EO to the external audience. These reports, in the form of letters to stakeholders or 10-K files, could provide great research insight on management perceptions and EO, ultimately, on the EO-performance linkage (Short et al., 2009). Apart from Short et al.'s study (2009), only limited research on EO applying a CATA approach has been performed to date (Wales, 2016 and McKenny et al., 2016). Among others, this approach will be discussed in a later section of Chapter 4 within this thesis.

2.4.3.2. Considerations When Measuring Performance

Referring to the basis of EO research in the strategy and management science, performance has become the most studied dependent variable (Gupta & Wales, 2017; Rauch et al., 2009; Wales, 2016). Thus, secondly, performance measures would need to find consideration in future studies whereas empirical research implies a broad variety of these (see Combs, Crook & Shook, 2005; Rauch et al., 2009; Venkatraman & Ramanujam, 1986). Zahra (1993) suggested the extension of Covin and Slevin's model (1991) by considerations that would cover additional organisational values such as workforce motivation, turnover, and firm culture (see also Wales, 2016). Lumpkin and Dess (1996) have categorised these as financial and non-financial considerations of relevant performance measures.

(i) These include traditional financial and accounting measures such as sales growth, market share, and profitability (Lumpkin & Dess, 1996). Similar to Lumpkin and Dess (1996), Rauch et al. (2009) have described performance as a multidimensional concept that requires the assessment of factors such as sales growth and ROI (Smith, 1976). Even though there may be a small convergence of different financial indicators (Murphy, Trailer, & Hill, 1996) on a conceptual level, research is able to differentiate between growth and profitability measures

(Rauch et al., 2009) such as the initial example of long-term investments. Additionally, research can be conducted based on self-reported or archived data (Rauch et al., 2009). This can be accomplished in the form of financial reports or also letters that are made available to stakeholders at least once a year.

(ii) Additionally to that, according to non-financial measures, Lumpkin and Dess' work (1996) has discussed 'overall performance' as being valuable since it connects firm goals, objectives, and target levels (also refer to Kirchhoff, 1978) into a possible linkage analysis. Moreover, their conceptualisation has introduced another component as well – stakeholder satisfaction (Lumpkin & Dess, 1996). This variable matches Rauch et al.'s meta-analysis (2009), as it suggests the incorporation of goals such as satisfaction or global success ratings provided by business owners or their managers. Other factors to be included are reputation, goodwill, and public image, as well as a certain level of commitment and satisfaction of the workforce (Rauch et al., 2009; Zahra, 1993).

From their meta-analysis, Rauch et al. (2009) have depicted that the evidence for financial measures is required to be included in EO studies as opposed to non-financial ones. Lumpkin and Dess (1996) imply that non-financial measures may provide a misleading understanding of performance if assessed imprecisely. Moreover, Zahra (1993) has proposed that non-financial indicators are more suggestive of firms during their early entrepreneurial stage, such as initiatives (see also Wales, 2016). While the firm satisfaction of a one-person start-up may be considered great, as may the performance, it would not give a clear or similar indication on the financial performance and market growth as compared to a Fortune 500 firm. Hence, non-financial measures may contest with one another depending on firm size, type, and ownership.

Moreover, Rauch et al. (2009) have observed that non-financial measures are frequently less indicative of firm performance due to them being difficult to measure and indirectly driven such as through subjective firm goals. If firm obligations would commit individuals, teams, or business units to reduced acceptance of risk-taking and innovation, it may lead to reduced satisfaction (decreased non-financial goal) but may increase the firm's short-term financial performance. Therefore, it is necessary to include other key variables particularly linked with the performance measures of a firm to gain a better insight into its performance and market growth.

2.4.3.3. Considerations of Context and Additional Dimensional Measurements

As indicated previously, research has acknowledged that additional impacting factors may require an assessment to understand the EO-performance linkage (Wales, 2016) that go beyond industry characteristics (see section 2.4.2). Thus, thirdly, Miller (1983) has indicated that the nature, specifically of correlations within entrepreneurship, may differ across various firm contexts. A three-tier differentiation by drivers of firm types has been suggested (see also Mintzberg, 1973, 1979). (i) Within small and simple firms, entrepreneurship may be driven by the personality of the leader. Having an internal locus of control, such a leader may be more entrepreneurial than the firm itself, (ii) whereas entrepreneurship in larger firms that requires intense planning and organisation may be a product of specific marketing strategies or even divisions, (iii) it may be more driven by organic structures and environmental challenges in others. This point will be further explored in later sections on vertical as well as horizontal dimensions of EO (see sections 2.5 and 2.6).

Concerning this, Miller (2011) urges researchers to concretely separate the various contexts of firms and their environments to study each such measure in detail for an explicit knowledge and understanding of certain settings. Then, it should be continued to research the multiple variables across each of these settings (Miller, 2011). Also, other scholars have asked for more contextualisation in EO research (such as Zahra et al., 2014). Useful taxonomies have been named as environment & industry, organisation, strategy, culture, leadership & governance (Miller, 2011) as well as time (Zahra et al., 2014). Hypotheses may be tested by defining a sample according to the identified key variables to then evaluate how they would differ from other variables of a certain EO study (Miller, 2011). It is recommended that this be followed by an empirical verification of the correlations of corporate entrepreneurship across (preferably) different firm or environmental factors to subsequently map these to the actual performance measures (Miller, 2011). In addition to the contexts presented above, additional ones may be considered. These are vertical, horizontal, and temporal dimensions.

2.5. Vertical Dimensionality: EO Variance across Organisational Hierarchical Levels

Theorists have proposed a link between managers' level of EO and an organisation's performance (Wales, Monsen, & McKelvie, 2011). As seen in Table 2 (page 38) and Table 3 (page 40), the idea of EO as being a firm-level phenomenon has been broadly accepted by scholars; these include Miller (1983), Covin and Slevin (1990), Hughes and Morgan (2007), Hughes et al. (2017). Wales et al. (2011), on the other hand, have evaluated EO differently; they consider it to be heterogeneously developed along the three vertical dimensions of top- and mid-level managers as well as non-managerial employees. Within such a three-tier setting, this section studies the role of employees in the strategic decision-making processes within entrepreneurship-oriented firms.

2.5.1. Vertical Variation of EO: Top-Level Managers

Scholars have indicated the importance of top-level managers towards an organisation's performance (Wales, Monsen, & McKelvie, 2011) since EO is conceptualised as a firm executing entrepreneurial behavioural patterns that are based on strategic decisions communicated by executives (Covin & Slevin, 1991). According to various studies, the definition of firm values is based on the job requirement of its senior managers (Covin & Slevin, 1989; Lumpkin & Dess, 2001; Wiklund & Shepherd, 2003; Hughes & Morgan, 2007). This thesis will merely focus on EO as a firm-level behaviour as well.

Within the top-level management, entrepreneurial behaviour and significant firm values have been defined as presenting either top-down or bottom-up perspectives. Firstly, from the top-down perspective, new business ventures are mostly motivated and mirrored by behaviours of individuals within the high-level management team (Burgelman, 1983) as they implement and evolve entrepreneurial strategies, communicate such, and supervise their growth throughout the lower-level teams. Further, entrepreneurial initiatives might arise independently within the firm (Burgelman, 1983). In this regard, autonomy has been identified as the most relevant indicator of EO (Lumpkin, Cogliser, & Schneider, 2009; Lumpkin & Dess, 2001).

Secondly, from a bottom-up perspective, EO might evolve as a strategic 'grassroots' formation, especially within the lower hierarchical levels. Behaviours of lower-level individuals acting autonomously might grow with time to impact the firm's behaviour as defined within the upper levels and also as a whole (Stopford & Baden-Fuller, 1994; see also Covin & Slevin, 1990). Top-level managers may be required to identify, grow, and integrate such EO input (see also Kumar, Stern, & Anderson, 1993). Therefore, within an organisation, top-level managers are indispensable towards the EO manifestation, but other attitudes and behaviours at lower levels may require consideration as will be examined within the following two sections (Wales, Monsen, & McKelvie, 2011).

2.5.2. Vertical Variation of EO: Mid-Level Managers

Throughout the last decade, the role of mid-level managers has been recognised in corporate entrepreneurship studies (Hornsby, Kuratko, & Zahra, 2002). Research suggests the relevance of mid-level managers towards business performance since they may act as the link between lower-level employees and top-level managers; hence, as middle-men (Bartlett & Ghoshal, 1993; Floyd & Lane, 2000; Wales, Monsen, & McKelvie, 2011). These, consequently, are challenged by the entrepreneurial strategies that require implementation as proposed by the top-level managers as well as by the already implemented operations of the supervised employees (Floyd & Wooldridge, 1999). Moreover, scholars propose the significance of mid-level managers regarding initiatives based on EO behaviours, thereby increasing the necessity of further examining the multiple levels of vertical EO variation (Hornsby, Kuratko, & Montagno, 1999; Kuratko, Ireland, Covin, & Hornsby, 2005).

Wales et al. (2011) suggest a differentiation of managerial levels between the organisational strategy and its social identity. Firstly, with regards to the organisational strategy, any employee – at various hierarchical levels – takes part in the strategic lifecycle process differently. Whereas top-level managers may be involved in the strategic decision-making processes directly, middle-level managers are more likely to secure such strategic implementations and to manage their operational activities (Floyd & Lane, 2000). Secondly, according to a firm's social identity, (i) similarly defined roles might differ from one firm to another based on the organisation's general EO setting. Within more entrepreneurial firms, such as start-ups, individual's roles are more likely to be reactive, whereas they would be more proactive in mature firms (Bartlett & Ghoshal, 1993). (ii) From a single firm perspective, in reference to Corley (2004), individuals at diverse hierarchical levels would describe the firm's strategic orientation in different ways.

To advance EO at the mid-level, Hornsby, Kuratko, and Zahra's (2002) study suggests quantifying properties of a scale to measuring the key internal factors that impact the mid-level managers' strategies. It proposes to take corporate entrepreneurship into account when developing and implementing new ideas within the firm where five empirically located states are employed in an attempt to influence the participation of mid-level managers positively.

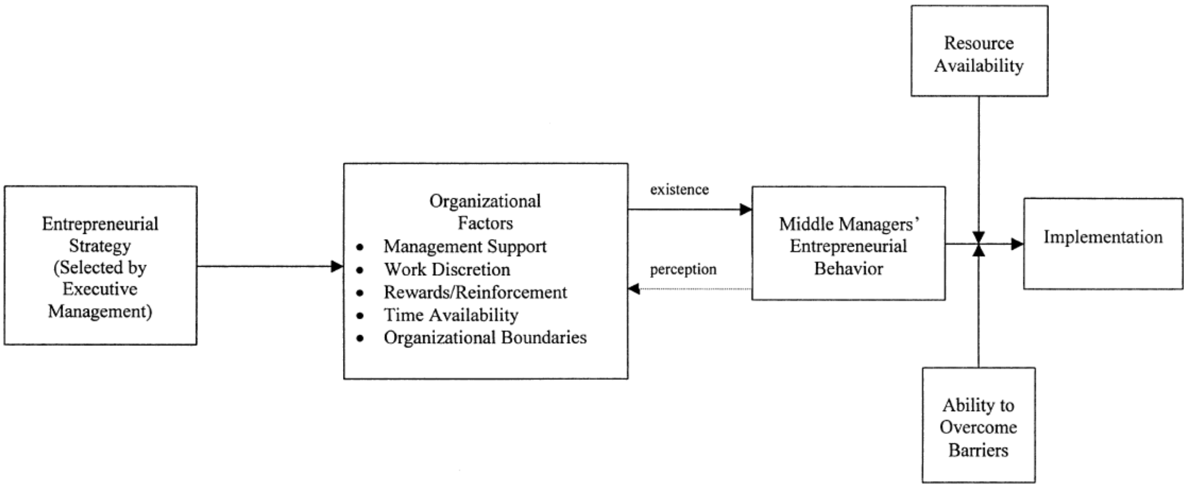


Figure 3: Vertical Dimensionality: Mid-Level Managers: Perceptions of Internal Environment on EO (Source: Hornsby, Kuratko, & Zahra, 2002)

As seen in Figure 3, according to Hornsby, Kuratko, and Zahra (2002), (i) to gain top management support requires the willingness of senior management to facilitate and advance entrepreneurial activities within a firm such as promoting novel ideas, providing resources, and expertise. (ii) Work discretion has to secure an internal environment that also allows calculated risks and tolerated failure. (iii) An effective reward/reinforcement system through goal settings, feedback, individuality, and result related incentives promotes entrepreneurial activities. (iv) Time and resource availability has to be secured to encourage risk-taking and experimentation. (v) Organisational boundaries and bureaucracy limit mid-level managers in their organisational activities where an administrative mechanism may foster chosen, evaluated, and implemented ideas. The study confirms the existence of these five distinct internal factors. However, the manner in which this measures the properties of internal factors with respect to either the upper or lower levels is open to future research.

The manifestation of a firm's strategy is dependent on an employee's perception of the same, its provision to the individual, and the employee participation within the strategic decision process (Wales, Monsen, & McKelvie, 2011). Hence, the understanding of the firm strategy also differs between the perception of mid-level managers and that of top-level managers.

Moreover, to define the pervasiveness and impact of EO at lower employee levels, short-term outputs such as initiatives, projects, experiments, and developments followed by new products/services are of relevance and will be studied in the next section (Wales, Monsen, & McKelvie, 2011).

2.5.3. Vertical Variation of EO: Non-Managerial Employees

As illustrated, the development of strategic processes at more senior-managerial levels allows the identification of novel opportunities (Mintzberg & Waters, 1985) while also strengthening the performance outcome of a firm through strategic implications (Bartlett & Ghoshal, 1993; Wales et al., 2011). However, how EO manifests within an organisation has received little consideration. A few scholars suggest that organisations entrepreneurial activities cannot be separated from those of individual employees as they are part of the whole (Covin & Slevin, 1991; Lumpkin & Dess, 1996; Miller, 1983). Hence, lower-level employees may be an important connector between the firm's strategy definition and its performance outcome.

Therefore, at least some theorists have come to a consensus that separation of EO activities from lower-level employees is questionable (Covin & Slevin, 1989; Lumpkin & Dess, 1996; Miller, 1983). One study has provided evidence regarding the manner in which EO can be stimulated among employees (Wakkee, Elfring, & Monaghan, 2010) while another displayed insight into the possible EO conceptualisation of individuals within small businesses (Krauss et al., 2005). Relatively few studies have examined the process of how individuals may develop their own EO perception to date (see working paper of Hughes, Reitering, Kraus, Covin and Bouncken, 2014).

Ultimately, EO may vary vertically across the hierarchical firm levels of top-level managers, mid-level managers as well as non-managerial employees subject to the individual's role and responsibility within the organisation. However, clear evidence of lower-level EO perceptions and an individual‘s possible contribution towards an organisation’s EO remain open to future research (De Clercq et al., 2010; Hayton, 2005; Wales et al., 2011).

2.6. Horizontal Dimensionality: EO Variance across Organisational Divisions/Areas

Large organisations tend to comprise complex internal structures to allocate, coordinate, and supervise activities. The early work of Galbraith and Kazanjian (1986) has explained the need for organisational structures in three ways. (i) For the breakdown of tasks into roles with responsibilities such as R&D, IT, and Finance. (ii) For the reorganisation of roles into divisions around functionalities, products/services, market segments, and/or geographical regions (refer also to Bogatyreva et al., 2017). (iii) And, for the concentration on a particular field of expertise within a role. As these needs may ease the successful alignment of targets with defined missions and set goals (Kazanjian & Drazin, 1987; refer also to Kreiser & David, 2010), Tushman and O’Reilly (1996) imply a manager’s need to separate tasks into groups to secure the firm’s efficiency and possible growth.

According to the literature, entrepreneurial activities tend to take place at the level of firm divisions (Wales et al., 2011; Zahra, Jennings, & Kuratko, 1999). Due to the differentiation of roles and responsibilities across multiple functional areas and departments, EO is more likely to manifest heterogeneously where it may stagnate otherwise (Wales, Monsen, & McKelvie, 2011). Wales, Monsen, and McKelvie (2011) have stated possible horizontal dimensions as being Structure, Strategic Fit, and Job Design; each of which will be carefully examined within the following sections. Even though not relevant for later sections of this thesis as such (except the strategic fit of EO), the review of the horizontal dimensionality will aid for the understanding of earlier efforts to grasp the concept of EO.

2.6.1. Horizontal Variation of EO: Structure

To emphasise on specific products/services, processes, and markets as determined by client, industry, or geographical settings, organisations often decide towards a multi-level and divisional form of structure (refer to Bogatyreva et al., 2017; Kazanjian & Drazin, 1987; Wales et al., 2011). On the other hand, single business units or firms tend to support autonomous resources, distinct markets, and a set of defined products/services (Pitts & Hopkins, 1982).

A horizontal variation of opportunities may contain the following entrepreneurially driven activities: the expansion of product/service lines, the improvement or repositioning, and the innovation expansion that is not a part of the core business (Kazanjian & Drazin, 1987). This diversification is usually supported by reducing costs of transactions (Jones & Hill, 1988), increasing functional-level relatedness and/or diversity (Kazanjian & Drazin, 1987), and also increasing asymmetries and the economic scope of information access (Nayyar & Kazanjian, 1993; Wales et al., 2011). To address a firm’s EO in such a way, the strategic decisions required and the necessary level of EO may vary along business units (Wales, Monsen, & McKelvie, 2011). Innovative units may be compelled to explore entirely new industry sectors, which would result in a variation of an EO’s manifestation due to challenging environmental and market situations (Lumpkin & Dess, 1996). Moreover, Birkinshaw, Hood, and Jonsson (2003) as well as Gupta, and Govindarajan (1991) propose a rationale of different EO levels caused by an organisation’s intention of having an international governance structure. Ultimately, Wales, Monsen, and McKelvie (2011) have described this as ‘Structure’ – a key component of the horizontal variation of an EO.

2.6.2. Horizontal Variation of EO: Strategic Fit

A firm’s organisational strategy is required to fit the various business units’ individualities. Wales, Monsen, and McKelvie (2011) imply that different manifestations of entrepreneurial activities and results find their rationale within three configuration theories of business venturing and strategic regeneration. Firstly, Miles and Covin (2002) suggest the need for an internal and/or external venture's alignment with the business unit manager's prerequisites and the firm's overall strategic objectives. Secondly, Baden-Fuller and Volberda (1997) similarly imply approaches as per which the regeneration of strategic implications and their goals are based on the fit of methods of change management and regeneration effort. Lastly, Baden-Fuller, Volberda, and Van den Bosch (2001) introduce methods according to which strategic regeneration is caused by the alignment of reactive versus proactive behaviours of an individual business unit's manager. Hence, the level of EO may vary across business units dependent on configurations. This variation is based on the fit of a firm's strategic decision-making processes and characteristics of the particular business unit (Wales, Monsen, & McKelvie, 2011). Ultimately, Wales, Monsen, and McKelvie (2011) have described this as 'Strategic Fit', another key component of the horizontal variation of an EO which will be relevant for later sections to describe an EO's ideal configurations (refer to section 3.1).

2.6.3. Horizontal Variation of EO: Job Design

Various or even similar functional job roles may have different objectives or restrictions (Hackman & Oldham, 1976) for which reason entrepreneurial behaviour may not be appropriate for all roles within a firm. For example, roles in Finance tend to have strict compliance restrictions (low need for entrepreneurial behaviour), whereas, within R&D, creativity in building novel products/services are promoted (higher need for entrepreneurial behaviour). To achieve the desired objectives, these roles may manifest their required level of EO differently as each business unit or individual within such may develop a strategic approach to fulfil the same (Monsen & Boss, 2004; Wales, Monsen, & McKelvie, 2011).

Firstly, from an organisational perspective, Covin and Slevin (1988) suggest that if responsibilities are getting more formalised, business units would be less likely to increase their level of EO as probable performance outcomes would not invariably increase. This view is supported by Hackman and Oldham's (1976) Job Design Theory according to which the variety of skills, identity of responsibilities, autonomy, and feedback are each a prime influence on an individual's motivation and performance. Adding to this, within the Socio-Technical Theory (early works of Friedlander & Brown, 1974; Trist & Bamforth, 1951), individuality of responsibilities as well as characteristics of technology are required to be incorporated into the job design (Wales, Monsen, & McKelvie, 2011). Advancing the previously discussed unidimensional perspectives of EO (see section 2.3), Wright and Cordery (1999) state that such theories do not explain any occurrence of contextual uncertainty that has been described as essential within firm entrepreneurship. Moreover, as evaluated along with section 2.5.1, a firm's EO has predominantly been considered to be a firm-level phenomenon (Covin & Slevin, 1989; Lumpkin & Dess, 2001; Wiklund & Shepherd, 2003).

Secondly, from an employee-level perspective, psychological literature implies that an individual's EO occurs steady and persistent irrespective of a particular situation or responsibility (Griffin, Neal, & Parker, 2007). Building on previous discussions on an individual's EO in the literature (such as De Jong et al., 2015), scholars assume a reduced EO at lower employee levels (Hayton, 2005; Monsen & Boss, 2009). However, other scholars state an individual's innovative and proactive ability as evidenced through certain circumstances, such as when an employee takes initiative in creating business and long-term performance value (Burgelman, 1983).

Being equipped with an entrepreneurial mindset, individuals are more likely to handle complex and uncertain situations and to locate novel opportunities that may impact the firm's performance positively (such as Haynie, Shepherd, Mosakowski, & Earley, 2010; McGrath & MacMillan, 2000; Wales et al., 2011). As soon as an individual's EO is job relevant, it could enrich a firm's innovativeness as well as the ease of implementing initiatives and encouraging autonomous and/or proactive actions in uncertain situations (see section 2.3) (Burgelman, 1983). According to literature, such entrepreneurial driven behaviour can be expected as a result of positive interactions with a supervisor (De Clercq et al., 2010; Konovsky & Pugh, 1994; Organ, 1988) as some individuals are more entrepreneurial in nature than their team members (Busenitz & Barney, 1997), or as an individual supposes a positive return from any entrepreneurial activities (Monsen, Patzelt, & Saxton, 2010). Therefore, selected previous research focuses on an individual's contribution towards a team through offered skills, abilities, and behaviours (Hollenbeck, Ilgen, Sego, Hedlund, Major, & Phillips, 1995; Ployhart & Moliterno, 2011). However, the manner in which an individual may contribute to a firm's overall EO (De Clercq et al., 2010; Hayton, 2005; Wales, 2016; Wales et al., 2011), how entrepreneurial behaviour is exhibited at different organisational levels (Covin et al., 2006) as well as its contribution towards firm performance has found little to no consideration in literature, as of now. Ultimately, Wales, Monsen, and McKelvie (2011) have described this as 'Job Design', a part of the horizontal variation of EO. As previously stated, even though relevant for future research of EO, the concepts of horizontal (except strategic-fit of EO) and vertical dimensionality (except firm-level EO) will not find further consideration for hypotheses testing.

2.7. Temporal Dimensionality: EO Variation across Time and State of Development

Following the exploration of earlier sections, EO is said to manifest through continuous entrepreneurial behaviour (Covin & Slevin, 1991; Miller, 2011) wherein it has been conceptualised as a firm's recurring behavioural pattern and not as an irregularity (Covin & Miller, 2014; Ireland et al., 2009; Wales, 2016). Wiklund and Shepherd (2011) have suggested the need for methods that aid in assessing time, causality, and reciprocity as well as methods to address temporal and longitudinal aspects of EO (Miller, 2011; see also Table 2, page 38 and Table 3, page 40). The demand for more time-based studies in EO research was noted by Wales (2016), Wiklund and Shepherd (2011), and Zahra et al. (2014) more recently as well.

This demand may be approached by literature on firms or different industry lifecycle states (such as defined in the initial work of Greiner, 1972). Literature has suggested that age and size of a firm must be linked to its development state despite the fact that not every firm grows and intends to grow similarly; therefore, each may have individual states of development processes (Wales, Monsen, & McKelvie, 2011). This perspective refers to an organisation's probable irregular and nonlinear internal development due to an unlimited quantity of states. Thus, Levie and Lichtenstein's (2010) idea of 'dynamic states' will find consideration throughout this section. Wales, Monsen, and McKelvie (2011) have provided current research with greater details on 'why' and 'how' EO may vary or evolve over time.

Firstly, when studying why EO may vary over time, research has reflected that any firm runs through dynamic states that symbolise its condition of internal strengths, abilities, goals as well as its external environment (Levie & Lichtenstein, 2010). This approach suggests, moreover, a firm's willingness to dynamically decide when and how it may adopt state changes while determining an internal and environmental fit (Miller, 1992). This view is similar to the previously discussed approach as per which external threats and a maximisation of performance would be addressed by the optimal configurational set of structure, strategy, and environment (such as Short, Payne, & Ketchen, 2008). According to this, firms would be able to change states – environmental or state setting may become obsolete – or not change states – maintain the performance level, which may satisfy internal goals or lead to failure. When performing changes, each state may require a different set of managerial skills, priorities, and/or overall structural configurations (Flamholtz & Randle, 2012). Hence, reflecting upon dynamic states and configurational settings, each firm would have to change strategic aspects over time as a result of continuous learning outcomes based on internal and external experiences (refer to Wang, 2008 and Wang & Chugh, 2010 for learning orientation). This adaption ensures securing the state's fit towards the firm performance goals (Wiklund & Shepherd, 2005).

A firm's manifestation of EO may be reflected in its current dynamic state based on formalised systems, structures, and decision-making processes (Kazanjian, 1989). Referring to Wales, Monsen, and McKelvie (2011), young firms in particular do not have set traditional, and/or formalised structures in place, which would be an indicator for the high level of centralised decision-making and possibly fast entrepreneurial state changes taking place (Hanks, Watson, Jansen, & Chandler, 1993). Growing and established firms, on the other hand, may have numerous structures dealing with a higher number of employees (Kazanjian, 1989), which could hinder or quicken entrepreneurial state changes as well. Informal, organic structures and their relationship to EO may let firm face issues as it changes states (Covin & Slevin, 1988; Green et al., 2008). Moreover, at certain times, when a firm decides on more formal structures to improve missing practices, systems, or its reputation, it becomes challenging to secure internal stability and control including the current set of EO manifestation (Hanks, Watson, Jansen, & Chandler, 1993). Thus, this relates back to Miller's (1983) call for an integration of firm types and dynamic states into an EO-performance conceptualisation by advancing it through the dimension of temporality.

Secondly, when studying how EO may vary over time, the development processes of a firm are possible measurement indicators as well. These include acquisitions, or hybrid and organic growth (McKelvie & Wiklund, 2010). Whereas young firms incline towards organic growth strategies, significantly projected by EO (McKelvie, Wiklund, & Davidsson, 2006), large and more established firms tend to develop through acquisitions, not projected by EO but dependent on financial and managerial accessibility (see also Penrose's (1995) theory). Hence, Delmar, Davidsson, and Gartner (2003) have suggested that various organisational types would require, related to size and age, different compositions of resources and level of EO. As per this, smaller firms may be more inclined towards proactiveness and competitive aggressiveness than their larger equivalents (Chen & Hambrick, 1995). This observation can be extended to new firms with limited practices that may find it easier to address radical innovation (Christensen & Bower, 1996). Contrarily, an EO of established firms may be negatively influenced by acquisitions (e.g., product enhancement) within its innovativeness and risk-taking (Hitt, Hoskisson, & Ireland, 1990). Moreover, mature firms tend to create and implement innovations that build on developed skills and experiences rather than creating new/other opportunities (Thornhill & Amit, 2003; Wales, Monsen, & McKelvie, 2011). However, relying on patterns of comfort and past achievements could lead to failure (Miller & Chen, 1994). Ultimately, a firm's manifestation of EO may change with its development processes and growth strategies; thereby, each would require further consideration.

Research has offered three additional alternatives to a firm's different EO manifestation over time. Firstly, as indicated before, not only firms but also industries may be driven by certain dynamisms with regards to EO relation that remain predominantly untested (see Table 2, page 38 and Table 3, page 40). Zahra and Wright (2012) have made a similar observation. "Controlling for the effects of industry dynamism, for example, is one thing, but looking into the sources of this dynamism and relating them to entrepreneurial activities can bring greater clarity about these relationships" (Zahra & Wright, 2011: 72). Secondly, it has been argued that a state change may be a thoughtful and proactive strategic decision. For example, an EO manifestation of a single business unit may influence and evolve a bottom-up strategy based on a longitudinal change of the firm's overall strategic orientation (Stopford & Baden-Fuller, 1994). On the other hand, this would imply a firm's ability to transfer an EO manifestation top-down from an established entrepreneurial unit to a newly acquired business unit that may not have been entrepreneurial before (Bartlett & Ghoshal, 1993; Wales, Monsen, & McKelvie, 2011). Thirdly, a change in states may be actively planned by an organisation due to the firm or industry forces (Volberda et al., 2001) that would impact a firm's EO manifestation in the long-run (Bartlett & Ghoshal, 1993; Mosakowski, 1998). Recently, Wales (2016) argued that firms are required to combine continuous entrepreneurial patterns with ambiguous entrepreneurial actions over time where firms may experience levels of high and low EO. This case is, for example, commonly observed in the high-tech industry where firms may need to adopt technical innovations (to keep their market share value high) that do not evolve internally but are developed by their competitors.

Ultimately, scholars have regarded dynamic firm states and development processes but also industry conditions as possible temporal indicators when studying a firm's EO. Its pervasiveness at the firm-level also at vertical and horizontal dimensions may vary over time and impact the EO-performance linkage differently, including various influencers of the environment. As there is only limited empirical research on the EO-performance relationship at more than one point in time (Rauch, Wiklund, Lumpkin, & Frese, 2009), a high quantity of scholarly works calls for temporal and longitudinal tests of multidimensional EO relationships (Wales, 2016). Zahra et al. (2014) have described this as the missing contextualisation within EO research to understand why and how EO is evolving on a firm-level with time.

As stated earlier, considering a different focus of this work, the vertical and horizontal dimensionality of EO will not be investigated further. Nevertheless, due to the complexity of various firm related contexts in regard to an EO's vertical and horizontal dimensionality and its missing attention in earlier EO research, we believe and propose that future studies with a focus on the firm practice shall analyse these dimensions in addition of time in form of a matrix or a three-dimensional framework on a regular basis. This may aid to assess whether EO is stable on these unexplored dimensions over time and to further allow a firm's top-level management to develop new as well as yearly adapted managerial implications. Please refer to section 7.4.3. on directions for future research for an exemplary description of such framework presentation.

2.8. Stabilisation of Theorising in EO Research

Although research on EO has only been in focus for a few decades, theories have advanced rapidity. It has shown that the connection of the knowledge from EO and strategic management research has been beneficial to understanding its discussed link towards business performance (Miller, 2011). Its usage is increasing steadily (Edelman, Manolova, & Brush, 2009) such as Jones and Butler's (1992) integration with the Agency Theory, or Wiklund and Shepherd's (2003) investigation of knowledge-based perspectives. However, many scholars have failed to include or account for multiple theories in their scholarly research on EO that may have been essential for their validity, and, instead, used individual ones (Aldrich, 1992, Wales, 2016).

To be able to match and capture a certain variety of theories within EO research, it is crucial to understand core models that employ similar approaches to explain heterogeneous variations of firm performance (Grant, 1998; Hawawini et al., 2003; King & Zeithaml, 2001; Rumelt et al., 1994; Spanos & Lioukas, 2001). A variety of these have been considered in previous scholarly works on EO; a majority of them distinguish between either a mechanistic or organic core (Farjoun, 2002). Here, mechanistic refers to a framework that is linear, static over time, and carries central key constructs, questions, and theoretical relationships (Farjoun, 2002). The organic framework relates to those that do not state a single direction and are continuous in their view of time (Farjoun, 2002). General theories that have received great notice in firm entrepreneurship literature are, amongst others, the Structure-Conduct-Performance model, the Resource-Based view as well as the Agency and Network theory.

Where the mechanistic views have been labelled as static (Pettigrew, 1992), linear (Henderson and Mitchell, 1997), and fragmented (Schendel, 1994), hence, predictable and sequential in their nature, organic views are said to transcend further by including the continuous assessment of time (Farjoun, 2002). This approach allows organic perspectives to test constructs' interactions and integrations with each other; it also becomes a means to provide new or different insights over and above mechanistic ones. Equally for both, no matter what core is chosen, their aims consist of the identification of sources and determinants of heterogeneous business performance (Farjoun, 2002).

Reviewing the EO literature, Wales (2016) has provided the following summary (Table 4) of several promising theoretical areas and their discussant citations that research is able to address. As reported within this table, Miller (2011) has also urged scholars to spread their research activities into these as well as into other promising areas that a multidimensional study on EO may benefit from. These areas will be of relevance towards the development of a theoretical framework as part of section 3.1, focussing on the configurational and contingency theory.

Table 4: Stabilisation of Theorising in EO Research: Selected Promising Theoretical Areas Suggested in Reviews of EO (Source: Wales, 2016)

Theory	**Premise**	**Discussant Citations**
Resource-based view (RBV)/ dynamic capabilities perspective	Certain firm resources and capabilities may lead to greater EO and/or enhance EO–outcome relationships; EO may give rise to firm resources and capabilities	Covin and Lumpkin (2011), Covin and Miller (2014), Edmond and Wiklund (2010), and Miller (2011)
Organisational change	EO is an important driver of organisational change; patterns of change may be particularly relevant to understanding the manifestation of EO	Miller (2011) and Wales et al. (2011)
Organisational ecology	The population density of competing organisations may affect how EO is manifest and its potential benefits; resource scarcity may suppress EO	Covin and Miller (2014) and Miller (2011)
Institutional theory	Normative, political, and cognitive institutional environments may influence EO; EO may be shaped by powerful social, stakeholder, or governmental pressures to imitate prominent competitors or to enhance their organisational legitimacy	Covin and Miller (2014) and Miller (2011)
Institutional logics	Enduring socially derived worldviews (such as those of religion, family, the capital market, and the state) may suppress or promote EO	Miller (2011)

Network theory	Firm positions within networks can influence the flow of resource critical to the effective manifestation of EO; regions may impact the effectiveness of EO (i.e. through contagion effects)	Covin and Miller (2014) and Miller (2011)
Neo-bureaucratic and contingency theory	Certain structural routines and standard procedures may have a role in fostering EO, while others hamper it; in general, a contingency perspective has broadly been called for in prior research	Covin and Slevin (1991), Lumpkin and Dess (1996), Miller (2011), and Rauch et al. (2009)
Agency theory and governance	Agency costs, board composition, or director beliefs may impact firm resource levels and affect firm EO	Miller (2011)
Entrepreneurial dominant logic	Firms facing similar environments may vary in their exhibition of EO based upon differing collective mindsets	Covin and Lumpkin (2011)
Subjectivist theory of entrepreneurship	Managerial prior experience and knowledge can affect perceptions of opportunity and resource usage	Covin and Lumpkin (2011)
Learning theory	EO enhances learning-related firm processes; EO relationships may be explained via learning-related processes and contextual elements	Covin and Lumpkin (2011)

The overall need for a more stabilised theorising of EO knowledge is vital to current and future EO research. When integrating theories into scholarly works of EO, Wales (2016) has presented a study of the EBSCO Business Source Premier Database, which returns 551 results for ‘entrepreneurial orientation’ but when combining it with ‘theor*2’, it returns only 365 results (66%) in articles and 138 results (25%) when scanning abstracts. Covin and Wales (2012) add that EO studies have to be based on a firm’s particular understanding of the nature of a theory. Moreover, “studies have undertheorised the heterogeneous nature of context, with consequent implications for empirical work and the insights that are derived” (Zahra & Wright, 2011: 71-72)[5]. Thus, model constructions of EO that capture individual dimensions are not alternative methods to evaluate the identical phenomenon. Instead, they are context-related methods to capture different phenomena (Covin & Wales, 2012; Zahra et al., 2014). For example, Lumpkin and Dess' (1996) study varies in its required input fundamentally from Miller's unidimensional construct (1983). This illustration indicates a certain variety of theory that previous research has attempted to frame. Concerning the outlined contingencies within Lumpkin and Dess' (1996) work, the following section will present alternative theories that have considered an EO dimensionality.

2.9. Alternative Contingency Theories Considering an EO's Dimensionality

A stabilisation of theorising EO and its performance impact may be intensified by introducing early conceptualised examples of additional possible linkages. Apart from Lumpkin and Dess' (1996) conceptual framework, numerous alternative models use contingencies of EO by including third variables (Boal & Bryson, 1987; Venkatraman, 1989). As presented in this section, these include the Moderating-Effects Model, the Mediating-Effects Model, the Independent-Effects Model, and the Interaction-Effects Model (Lumpkin & Dess, 1996).

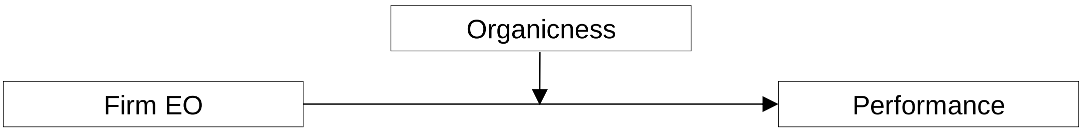


Figure 4: Alternative Contingency Theories: Moderating-Effects Models (Source: Lumpkin & Dess, 1996)

Firstly, as seen in Figure 4, according to the Moderating-Effects Model, the specification or strength of an EO-performance linkage differs based on a firm's structure (Lumpkin & Dess, 1996). Organic firms are characterised by their decentralised, informal structures that display prominent lateral interactions and identical knowledge transfers throughout their system

[5] Although Zahra and Wright's (2011) critique was levelled at the wider entrepreneurship literature, the concern remains equally valid for EO research.

(Lumpkin & Dess, 1996). Conversely, mechanistic firms are highly centralised and formally structured with a significant level of vertical communication and focussed diversity across functions (Burns, Stalker, 1961). Covin and Slevin (1988) have found that an organic firm structure moderates the impact of entrepreneurial decisions towards performance. Thus, Lumpkin and Dess (1996) have proposed to study whether firms moderated by their organic structure would have a higher EO-performance linkage as compared to those without. This perspective has been supported by other studies such as Miller's approach to considering firm types as possible EO-performance indicators (1983, 2011). Moreover, Covin and Slevin (1991) and Miller and Friesen (1982) have implied relevance of organic structures towards structural contexts of autonomy and innovativeness. The competitive aggressiveness-performance linkage, however, may be negatively moderated by organic structures as it may limit firms to concentrate on industry rivals (Lumpkin & Dess, 1996). For future research, the Moderating-Effects Model may be relevant towards an understanding of horizontal firm structures and their possible impact on performance (see section 2.6.1).

Figure 5: Alternative Contingency Theories: Mediating-Effects Models (Source: Lumpkin & Dess, 1996)

Secondly, the Mediating-Effects Model considers EO as the antecedent variable and business performance as the outcome variable, with the integration of organisational activities as the mediating variable as seen in Figure 5. One example of a mediating variable is Wang's (2008) inclusion of learning orientation into the model (also refer to Wang & Chugh, 2010 for past research and future challenges in entrepreneurial learning). Firm activities and processes intercede the EO-performance linkage. Researchers argue that firms with an exceptional level of EO joining new product or service markets would have a higher risk due to a more complex and evolving environment that may require integrative structures (Choi & Williams, 2016; Galbraith, 1973; Lawrence & Lorsch, 1967; Lumpkin & Dess, 1996). Kanter (1983) has added that an integrative firm approach may promote innovative activities, including integrative ones across horizontal firm levels (Porter, 1985). Thus, Lumpkin and Dess (1996) have suggested studying whether the effect of EO on performance is carried through the level of the firm's integrative activities, such that firms with higher levels of EO tend to have higher levels of integrative activities which then result in higher performance. This view has been supported by multiple recent studies. Wales et al. (2013) have argued that current research on mediating impacts would be limited, as it is known as the 'black box' of EO. For future research, the Mediating-Effects Model may be of relevance towards considerations of the horizontal dimensions of the firm structure and job design (see sections 2.6.1 and 2.6.3) as well as contextual firm and industry settings.

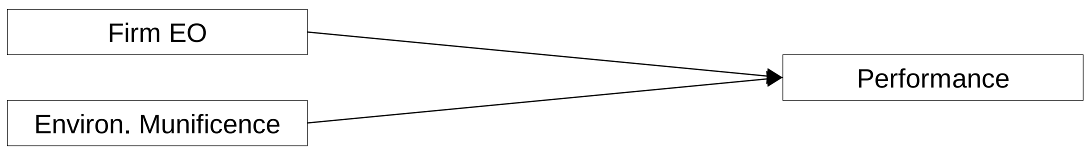


Figure 6: Alternative Contingency Theories: Independent-Effects Models (Source: Lumpkin & Dess, 1996)

Thirdly, as seen in Figure 6, according to the Independent-Effects Model, a firm's EO and its environment impacts the dependent variable of firm performance independently. Here, environmental munificence has been considered to be industry profitability and growth rates (Lumpkin & Dess, 1996). This definition conforms Porter's (1981) early assumptions regarding an industry's profound impact on businesses' performance (see also Beard & Dess, 1981; Lieberson & O'Connor, 1972; Rumelt, 1982). Moreover, the environment will not interrelate with business outcomes (Lumpkin & Dess, 1996). Thus, Lumpkin and Dess (1996) have suggested the need to research whether both environmental munificence and EO would have independent effects on business performance. For future research, the Independent-Effects Model may be significant towards furthering the understanding of whether industry munificence impacts performance independently, much like the firm's EO, or whether the environment is a moderating variable as suggested within Lumpkin and Dess' conceptual framework (Lumpkin & Dess, 1996) (see section 2.2).

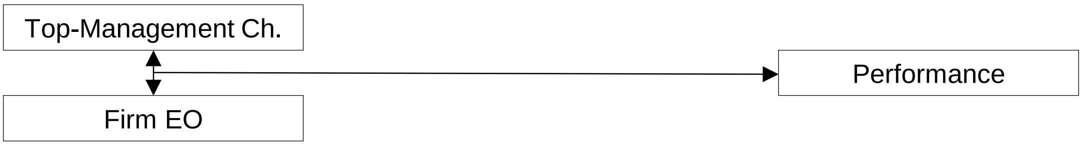


Figure 7: Alternative Contingency Theories: Interaction-Effects Models (Source: Lumpkin & Dess, 1996)

Lastly, the Interaction-Effects Model assumes that top-level management characteristics would interact with the firm EO to influence business performance as seen in Figure 7. Top-management characteristics in this sense include the need for achievement and tolerance of ambiguity (Budner, 1962; Lumpkin & Dess, 1996; McClelland, 1961). Thus, Lumpkin and Dess (1996) have recommended the necessity of studying whether a high tolerance for ambiguity/need for achievement and its EO interaction would impact business performance positively. For future research, the Interactions-Effects Model may be significant towards an understanding of vertical dimensions impacting the EO-performance linkage (see section 2.5).

Acting as alternatives to Lumpkin and Dess' (1996) initial conceptualisation, these models consider different EO-performance contingency linkages which are relevant till date. Hence, these may provide researchers with additional insights into the connection of EO and business performance. Moreover, these may also support the development of an overall framework to test various competing theories.

To conclude, within the research of firm-level entrepreneurship, the theoretical conceptualisation of EO has received great attention in the last few decades. Being equipped with partially consistent and initial findings across empirical studies on the EO-performance linkage as well as knowing about selected EO theories and the alternative contingency theories enables a holistic understanding of the current debate. However, many questions were displayed to remain open for future research. Thus, the following section will summarise present gaps in EO literature.

2.10. Summary of Current Gaps in Literature

Research on EO has evolved and stabilised with time. However, several debates about the definition of EO, its conceptualisation and dimensionality, and its linkage to performance continue to draw attention. In the following, current gaps from the previously presented literature will be examined along with the selection of the most urgent ones to build specific research questions to be addressed along with this study. These gaps have been discovered from the findings of Table 2 (page 38) and Table 3 (page 40), specifically columns ‘E’ through ‘M’, that evaluate previous studies on the universal and independent EO-performance linkage.

2.10.1. Research Gaps

Study Approach and Research Accuracy

According to Miller (2011), researchers are tempted to favour quantitative over qualitative approaches; commonly e-mail questionnaires rather than interviews are chosen. Miller (2011) also highlighted the preferred use of convenience samples. This concern has been observed in this study’s tabular comparison on previous research of the EO-performance linkage as well. As seen in Table 2 (page 38) and Table 3 (page 40), surveys have been used by 9 out of 14 researchers. Moreover, several quantitative studies have a high proportion of different industry coverage while also employing remote questionnaires with single respondents in their samples, thereby limiting the validity of their results (Miller, 2011; Rauch et al., 2009). Only 2 out of these 14 studies have employed existing secondary data for quantitative analyses. Thus, EO research faces compromises and limitations to build knowledge that can be of empirical value (Miller, 2011).

Nevertheless, the quality of quantitative research continues to improve as has been discussed within Rauch et al.'s (2009) meta-analysis on the EO-performance relationship. Additionally, Miller (2011) has suggested that samples should be explicitly specified and has also raised the need to understand their data heterogeneity as well as the manner in which they may impact a study's results. Thus, researchers are required to know their study approach's specificity as well as the industry and firm contexts within which their results can be applied. Following this, this thesis will combine various contextual perspectives under the study approach of content-analysis.

Dimensionality of EO

There is minimal research on all five EO dimensions. Scholars tend to study the three uni-dimensions as initially described by Miller (1983), while only a few consider the multi-dimensions of EO. Miller (1983) has defined an entrepreneurial firm as one that "engages in product market innovation, undertakes somewhat risky ventures, and is first to come up with 'proactive' innovations, beating competitors to the punch" (p.771). Major studies on the unidimensional approach include Zahra (1991), Zahra and Covin (1995), and Wiklund and Shepherd (2005); others have repeatedly pinpointed and researched on these three core dimensions alone (see also Hughes & Morgan, 2007). The further question of the number of dimensions appears to be caused by the outcomes of research efforts (Covin & Lumpkin, 2011); accordingly, the matter of dimensionality is to be considered as theoretical and not an empirical one. Covin and Lumpkin (2001) argued that, therefore, an EO could be conceptualised as either uni- or multidimensional construct mainly driven by the approach of the data analysis. As a consequence, empirical findings will only be able to explore the extent to which a study measure can be associated with a specific context (Covin & Lumpkin, 2011). Therefore, the quantity of EO dimensions is a different question to what EO actually is.

Following previous discussions, inconsistencies have been reported on the selection of a dimensional approach referring especially to the multidimensional model as one that calls for future research for greater EO insights (see section 2.3 as well as Schueler et al., 2018). Moreover, Miller (2011) himself acknowledged that Lumpkin and Dess' (1996) five multi-dimensions should be considered when evaluating the EO-performance linkage. Even though theoretically crucial, the study of the individual influence based on innovativeness, risk-taking, proactiveness, autonomy, and competitive aggressiveness towards firm performance as defined by Lumpkin and Dess (1996) has found little consideration in scholarly works and will be, due to the aforementioned advantages, evaluated here.

EO-Performance Causality including Multi-Dimensionality

An EO's multi-dimensionality has been rarely related to business performance. As indicated within Table 2 (page 38) and Table 3 (page 40), there is a common understanding of a positive EO-performance linkage of all (such as Rauch et al., 2009; Martins & Rialp, 2013; Shirokova et al., 2016; Wiklund & Shepherd, 2005; Zahra & Covin, 1995) or at least a combination of the five dimensions (Hughes & Morgan, 2007; Wales et al., 2011). Whereas some dimensions may have a positive impact, others may have a neutral or even negative influence (such as Hart, 1992; Hughes & Morgan, 2007; Morgan & Strong, 2003; Smart & Conant, 1994; Schueler et al., 2018; and as theorised by Lumpkin & Dess, 1996).

Referring to Lumpkin and Dess (1996), EO dimensions could lead to favourable or unfavourable outcomes depending on the various firm as well as environmental contexts, that could, moreover, change with time upon the alteration of the nature of a firm's EO (Hughes & Morgan, 2007). Consequently, EO may be more or less valuable under different industrial or contextual conditions but may also oscillate over time depending on the contextual (e.g., environmental or industrial) contingencies acting upon the firm. This concern of independent dimensions to evaluate and secure various business outcomes has remained unnoticed by scholarly research and will, therefore, be addressed here to develop new and improved links to measure a firm's EO impact on individual performance indicators.

Organisational Factors Including the Firm Development States and Types of Initiatives

Many works have urged scholars to distinguish between various organisational factors when studying EO-performance relationships. Two of them include the firm state and types of entrepreneurial initiatives and/or new entry (Hughes & Morgan, 2007; Miller, 2011; see also Wales, 2016; Williams, 2018). New entry could take place at any firm development state such as start-up, growth, establishment, expansion, or maturity in the form of new ventures, initiatives, product innovations, or even globalisation (Miller, 2011). All of them may require differently aligned processes and resources (Miller, 2011). This fact has been observed by various scholars as many focus their studies on a specific kind of entry and firm state. Whereas Covin and Slevin (1990), Smart and Conant (1994), Wiklund and Shepherd (2005), and a variety of others have studied small and young businesses, Zahra (1991), Morgan and Strong (2003), and only a few others have researched large and established corporations. Others have proposed or studied a number of possible firm development states such as Hart (1992), Lumpkin and Dess (1996), and Rauch et al. (2009).

Therefore, EO literature has addressed a variety of settings. However, small and new ventures have been predominantly considered on the firm-level, especially concerning a multi-dimensional approach (see Table 2, page 38 and Table 3, page 40). This fact could be caused by easier access to samples of small firms than to data of international corporations. When analysing the firm practice of various available resources and capabilities with respect to different firm contexts of management and culture, it is highly relevant to understand the value of each dimension towards firm outcomes and at what firm state a dimension may become more vulnerable than others (Hughes & Morgan, 2007). Thus, it is open to future research primarily, the manner in which each multi-dimension relates to business performance considering not only young but also established enterprises which will find due consideration within this study.

Environmental Factors Including Missing Contextual Specialisation and Range of Industry

Researchers have urged distinguishing between various environmental factors when studying EO-performance relationships. These may include industry characteristics – such as types and conditions – and have partly been used within previous works on EO (see Table 2, page 38 and Table 3, page 40). Moreover, EO research has reported that entrepreneurship and EO may vary in their nature and given contexts (Lumpkin & Dess, 1996; Miller, 2011; Zahra et al., 2014). A variety of aspects may simultaneously impact EO and performance outcomes (Miller, 2011), which is why research samples bearing the richness of contexts are crucial (Gartner, 2008; Zahra et al., 2014).

Firstly, with regard to industry types, some scholars have studied firms of certain industry categories such as high-technology intensive firms (Choi & Williams, 2016; Hughes & Morgan, 2007; Morgan & Strong, 2003), non-high-tech/less-tech intensive firms (Smart & Conant, 1994) or even both (Rauch et al., 2009). Others have considered the lifecycle stages in emerging, growing, and mature industries (Covin & Slevin, 1990; Hughes & Morgan, 2007; Lumpkin & Dess, 1996) or their proximity in time to an economic shock (Kraus et al., 2012).

According to Rauch et al. (2009), differences have been found between high-tech and non-high-tech/less-tech intensive firms; wherein, there may be a stronger EO-performance linkage in the former industry group. Miller (2011) has pointed out that a majority of scholars have failed to specialise their research into such specific categories regarding industries, industry lifecycles, or even countries/regions (refer to Bogatyreva et al., 2017; Matsuno, Mentzer, & Özsomer, 2002; Zahra & Covin, 1995).

Secondly, with regard to industry conditions, there exists a disagreement of research on two major concerns of the conceptualisation and measurement of OTE. Firstly, numerous researchers have accepted the method of objective (archival) measurement of OTE. However, there are ongoing debates on the selection of industry dimensions (Dess & Beard, 1984; Wales, 2016). Due to that, secondly, when studying a firm's multidimensional impact on performance moderated by industry conditions, others have considered only selected EO dimensions in one study, which may show only parts of the whole, such as Lumpkin & Dess (2001). Yet, treating the EO-performance relationship with such moderating variables may aid in addressing contextual perspectives and generating a more fine-grained and empirical knowledge reservoir of EO literature (Miller, 2011). Moreover, the dispute on the ability to generalise study findings while also maintaining the required specialisation as per the multidimensional approach and industry factors may lead to broader outcomes that are difficult to implement in most other firms and their contexts. Therefore, it calls for research to define a more linear model.

Consequently, EO research needs to understand whether EO is universally beneficial for firm performance (considering a contingency approach; refer to section 3.1.1), especially when observing this linkage across industry types, such as high-tech and less-tech intensive, and conditions, such as munificence and turbulence (environmental), and whether that benefit relies on the EO-performance relationship being customised based on firm configurations (refer to section 3.1.1). This will be investigated along with this study.

Economic Situation

The economic situation is part of a firm's environmental and somewhat organisational factors as event-based contextual considerations. Organisational situations may include a firm's transformation into a new industry, and changes in leadership styles, ownership, or management team, whereas the environmental situation may deal with economic crises (Kraus et al., 2012; Miller, 2011). The latter part has rarely been studied in previous EO research except Kraus et al. (2012) who researched small and medium-sized firms within the global economic crisis (see Table 3 (page 40) for further details). Even though relevant to future EO research, studying the impact of economic crises on the EO-performance linkage does not aid in examining the research questions under consideration of this thesis.

Vertical Dimensionality (Firm-Level of EO)

As Miller (2011) indicates, there exists a current debate about whether EO can be defined as an attitude held by principals or top-level managers, a set of organisational behaviours, a combination of both (Covin & Slevin, 1991; Miller, 1983), or as not only a firm-level phenomenon but driven by individual and/or lower-level employee perceptions (Wales et al., 2011).

Table 2 (page 38) and Table 3 (page 40) illustrate that a majority of scholars have not specified any vertical dimension in their research at all or have focused on EO as a firm-level phenomenon. Knowing the need for further research to explore an EO's manifestation throughout organisations at non-managerial employee levels, this study will predominantly focus on EO as a firm-level phenomenon to grasp its impact on performance under different contexts. This decision is predominantly driven by the methodological approach of this research, namely content-analysis of firm-published texts.

Horizontal Dimensionality (Ideal Profiles of EO)

Horizontal Dimensionality has initially been defined by Wales et al. (2011) who urge the need to study EO across horizontal firm structures/business units, strategic fit, and job design as part of a firm's organisational environment. As displayed in Table 2 (page 38) and Table 3 (page 40), either two, one, or none of the horizontal dimensions have found consideration within previous research of EO. Firm structures and strategic fit, for example, have been evaluated by Miller (1983) and Covin and Selvin (1991).

Previous research has acknowledged that EO provides critical insights into questions of organisational-level strategy and performance; however, the manner in which EO manifests inside organisations has received little attention (Wales et al., 2011). Future research is suggested to study all horizontal dimensions within a single work or at least a selection of them. This research will focus on the ideal profile configuration of EO as its strategic fit within the firm (refer to section 3.1 for further insights).

Temporal Dimensionality

A key consideration that has so far been left untreated is whether EO varies over time and context. Only a few temporal and longitudinal within a couple of cross-sectional studies on the EO-performance linkage have been conducted to date. Table 2 (page 38) and Table 3 (page 40) imply the same. Only 3 out of 14 studies contain temporal/longitudinal approaches (Zahra, 1991; Zahra & Covin, 1995; and Matsuno, Mentzer, & Özsomer, 2002). Most studies have not noted the impact of EO in a strict sense as they were either using cross-sectional data or measured EO at one point in time and the respective firm's performance at a later point, however not over the duration of multiple years (Rauch et al., 2009). Within their conceptualisation, Lumpkin and Dess (1996) have already suggested that firms change, and their nature of EO may change with it. Thus, the evolvement of firm age, size, and other environmental factors, specifically industry, may determine a firm's needs and its EO-performance relation (Wales et al., 2011; Wales, 2016).

Many other scholars have not conducted but recommended considerations of temporal dimensionality such as Hart (1992), Lumpkin and Dess (1996), Rauch et al. (2009), and Hughes and Morgan (2007). Thus, it is open to future research mainly whether and at what point in time one EO multi-dimension becomes more or less relevant than another. To consider various development states of firms but also industries is crucial to understanding why inconsistencies in the EO-performance linkage have been reported. This argument includes the manner in which EO levels may change when transitioning between such states, such as between high and low munificence. Moreover, the question remains whether single EO dimensions may influence others, hence, may leverage firm performance differently over time.

Furthermore, as indicated by Hughes and Morgan (2007), mixed results have been reported on whether EO dimensions impact business performance through other mechanisms indirectly; e.g., through market orientation (Bhuian et al., 2005; Matsuno et al., 2002). Research may benefit from finding empirical connections between multi-dimensions, organisational and industry contexts as well as from understanding the impact of EO on performance from a long-term perspective. An initiative for this will be proposed along with this research.

2.10.2. Selection of Urgent Research Gaps, Research Questions, and Literature Review Closure

A number of current gaps in EO research have been presented. Following Figure 8 displays a diagrammatic view of the most urgent ones that require immediate action with regards to the understanding of the multidimensional linkage of EO to performance when accounting for industry characteristics in particular after having identified them to be potential major impacting environmental factors. Firstly (RQ1), it remains to be evaluated whether a firm can describe an ideal profile of all five EO multi-dimensions and how this fit may differ between different industry types (strategic fit). Secondly (RQ2), when assuming the linkage being impacted by industry types, it remains to be investigated whether and which EO dimension is more valuable towards business performance than the others may be (concerning various performance measures). Thirdly (RQ3), many questions on the impact of temporal dimensionality on the EO-performance linkage remain; hence, how this relationship behaves when accounting for varying industry conditions requires examination. Finally (RQ4), it has to be tested whether the effects of EO will last longer than its initial time or investment period.

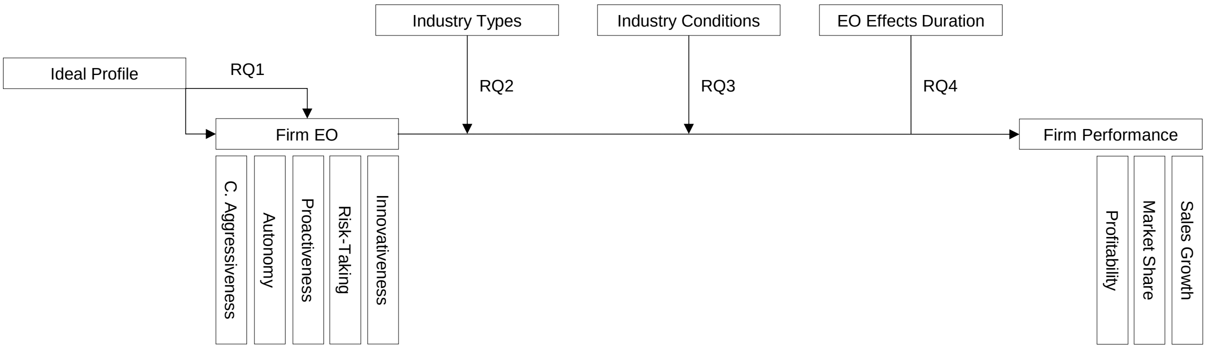


Figure 8: Summary of Current Gaps in Literature: Research Questions

Thus, following the previous evaluation of research gaps in current EO literature, future scholarly work is urgently called to address these predominantly identified research questions:

RQ1: Does the 'perfect' level of EO and its dimensions differ from one industry type to another?

RQ2: Does the EO-performance relationship replicate across industry types?

RQ3: Does EO affect performance consistently when accounting for variation in industry conditions across the different types of industries?

RQ4: Does EO continue to affect firm performance beyond its initial time period?

Ultimately, research has to define and derive at fine-grained samples and contextual findings which will be significant towards specific but closely described settings within management, entrepreneurship as well as EO literature. Considering EO as a multidimensional construct – addressing the five dimensions of innovativeness, risk-taking, proactiveness, autonomy, and competitive aggressiveness – will aid for the exploration of greater insights on its performance impact driven by certain contextual and industrial characteristics.

CHAPTER 3: THEORETICAL FRAMEWORK AND HYPOTHESES

The following chapter will illustrate this study's theoretical framework development and conceptual agreement by creating a combined conceptualisation of the configurational and contingency approach and will outline the hypotheses to be addressed.

3.1. Theoretical Framework Development and Conceptual Agreement

This section will develop the theoretical framework chosen for this thesis and conclude with a conceptual agreement on the same. Focusing on advancing the stabilisation of theorising within EO research, this study employs the contingency and configurational theory to best capture the context sensitivity of the EO-performance relationship moderated by industry characteristics including its temporal dimensionality.

3.1.1. Contingency and Configurational Theory

The selection of a scholarly work's research theory should be driven by its aims, contexts, and existing knowledge. Despite the literature being equipped with several promising theories for the conceptual development of an EO research (see section 2.8), only a few of these take industry characteristics into account. Of these, most empirical studies have merely considered them as a control variable. In this regard, the Structure-Conduct-Performance (SCP) model is advantageous because it treats the industry as a core component of its predictions about firm performance (Farjoun, 2002), however, it does not conform this study's aims as evaluated in Appendix 1.

Progressing from the SCP model will aid for the consideration of input from firm-specific constellations of an EO and its possible impact on various performance indicators while being influenced by industry characteristics. Scholars have proposed several approaches to capture the complexity of the EO-performance linkage. These include the universal, contingency, and configurational theory. Here, the contingency and configurational approaches permit studying the combinations of EO dimensions that may unlock higher performance. Throughout the following, the theoretical lens of both the models will be presented, concluding with their adaption to the goals of this thesis.

Contingency Theory as a Theoretical Lens

The early research relied on the universal-effect model in which a fixed level of EO is assumed to be universally beneficial (Wiklund & Shepherd, 2005). Questioning the universal conceptualisation, theorists started using contingency theories to grasp whether a certain EO level would have a greater or lesser impact on performance since each firm is different and faces diverse situations (Wales, 2016; Wiklund & Shepherd, 2005). Originally, contingencies have been described as a two-way interaction and became a prominent model in EO research. Wales et al. (2011) labelled this as an initiative to unlock the before-mentioned ‘black box’ of EO, which has to do with how EO exerts its effects on firm performance. As some dimensions of EO may be vulnerable towards the contingency of performance, this became a matter of urgency after the meta-analysis of Rauch et al. (2009) concluded on the generally positive effect of EO on firm performance.

Evaluating the contingency theory in their conceptualisation of EO, Lumpkin and Dess (1996) summarised the contingency variables used within early previous research (at the time of their work) as seen in Table 5 (e.g., Covin & Slevin, 1989; Karagozoglu & Brown, 1988; Zahra & Covin, 1995). For example, Covin and Slevin (1991) in their seminal work, studied the relationship of structure, strategy, and environment to the three dimensions of EO. Likewise, other studies investigated the linkage between contingency variables and individual EO dimensions (see also Lumpkin & Dess, 1996). Hence, it may provide researchers with greater details when understanding complementary factors among the various firm settings (Wiklund & Shepherd, 2005). This perspective will be essential for the following parts of this section that focus on examining the contingencies of EO and performance, and the relevance of industry characteristics to this constellation. For more recent works on the contingency approach refer to Anderson et al. (2015), Covin & Wales (2018), Schueler et al. (2018), and Wales (2016) who still call for the urgency of contextualisation in EO research referring to environmental and organisational factors.

Table 5: Theoretical Framework: EO Impacting Performance: Contingency Variables related to EO-Performance (Source: Lumpkin & Dess, 1996)

Environmental Factors	**Organisational Factors**	
Environment	**Structure**	**Firm Resources**
Covin & Slevin, 1989	Bahrami & Evans, 1987	Birley, 1995
Karagozoglu & Brown, 1988	Covin & Slevin, 1988	Ostgaard & Birley, 1994
Khandwalla, 1987	Jennings & Lumpkin, 1989	Ramachandian & R., 1993
Miller, 1983	Miller, 1983, 1987	Romanelli, 1987
Miller & Friesen, 1978	Naman & Slevin, 1993	Stevenson & Gumpert, 1985
Miller & Friesen, 1983	Sandberg & Hofer, 1987	
Zahra, 1993	Slevin & Covin, 1990	**Culture**
Zahra & Covin. 1995		Burgelman, 1984
	Strategy	Burgelman & Sayles, 1986
Industry Characteristics	Gupta & Covindarajan, 1984	Kanter, 1982, 1983
Cooper, 1979	Miller, 1988	Stevenson & Gumpert, 1985
Eisenhardt & Schoonhoven, 1990	Naman & Slevin, 1993	Stuart & Abetti, 1987
MacMillan & Day, 1987	Sandberg & Hofer, 1987	
Miller & Camp, 1985	Venkatraman, 1989	**Management Team Charact.**
Porter, 1980	Woo & Cooper, 1981	Begley & Boyd, 1987
Sandberg & Hofer, 1387		Cooper & Dunkelberg, 1986
Stuart S& Abetti, 1987	**Strategy-Making Processes**	Eisenhardl & Schoonhoven, 1990
Tushman & Anderson, 1986	Burgelman, 1983	MacMillan et al., 1987
	Jennings & Lumpkin, 1989	
	Miller & Friesen, 1982	
	Schafer, 1990	

Configurational Theory as a Theoretical Lens

As previously indicated, there is a common understanding regarding the existence of different relationships between distinctive types of businesses (Wiklund & Shepherd, 2005). According to configurational theory, performance may be increased by optimal alignment of key variables within firms (as initially investigated by Naman & Slevin, 1993) and its environment (Kearney et al., 2017; Venkatraman, 1989). It implies the need for the 'perfect' or 'ideal' fit of those variables to each other. Configuration theory is both a set of predictive guidelines and an associated analytical technique to determine what specific configurations or constellations of factors are exhibited by firms characterised as being 'high performers', and whether deviance from such a profile is indicative of poor performance among firms outside of this elite group. Deviance from this might (or would be expected to) undermine firm performance in comparison to 'better configured' rivals if (in our case) EO is truly associated with high performance. Hence, a configurational assessment enables scholars to develop a precise profile of a set of dimensions within a set of firms. More recent works on configurational tests in EO research include Hughes et al. (2007), Hughes et al. (2017), Kearney et al. (2017), Kreiser & Davis (2010). Such assessment is usually applied to define an 'ideal' profile of dimensions as resulting from a sub-set of great performing firms within a population (Hughes et al., 2007; Vorhies & Morgan, 2003; Kreiser & Davis, 2010). Selecting indicators allow defining these high performers (Hughes et al., 2007) followed by mapping the profile of these to a set of dimensions, here the multi-dimensions of EO.

Following Hughes et al.'s (2007) investigations, who initially studied configurations within EO research, profiles can be defined theoretically – by 'guessing' ideal values per dimensions based on existing studies – or empirically – by studying empirical data as derived from high performers (see also Vorhies & Morgan, 2005). As the profiles of EO cannot be identified from theory in EO due to missing maturity and context sensitivity, ideal profiles require empirical investigation.

For the multi-dimensions of EO as such, it is necessary to investigate whether there exists an ideal combination of these dimensions that may yield superior performance (such as Van de Ven & Drazin, 1985; Kreiser & Davis, 2010). Having identified the high performers and their conditions as a sub-set within the population, a comparison against all other performers can reveal why some firms achieve greater performance outcomes than others do (Hewett, Roth, & Roth, 2003; Hughes et al., 2017) and whether EO is in part responsible for that (Hughes et al., 2007). This perspective can be further compared with firms in different two industry types (of high-tech versus less-tech intensive in this case) to better account for context. Within the sub-set of high performers, the firms EO configurations are meant to be ideal as they represent an elaborate set of various, independent, and equally reinforcing organisational characteristics that allow a firm to secure its aims (such as Ketchen, Thomas, & Snow, 1993; Miller, 2011). Hence, these EO configurations represent a benchmark of exemplary firms (Vorhies & Morgan, 2005) if deviance from this profile is material different from lesser performing firms.

Having defined the ideal profile, configuration analysis then enables the researcher to examine whether a poor fit or deviance from this profile impacts performance when accounting for the subset of high performance versus the rest of the population. Such deviation indicates a lack of fit; hence, the degree to which the level of the population's multi-dimensions varies from the ones of the ideal profile sub-set as derived from high performers (see also Hughes et al., 2017). Assuming a significant effect of EO on performance, a negative impact on such is expected ones a firm's EO configuration does not conform to the ideal profile. If that would not be the case, firms may be high performers due to other factors (Hughes et al., 2007; Kreiser & Davis, 2010) and statistical assessments may reveal no noteworthy linkage of EO and performance based on configurations. Moreover, it may allow verifying whether patterns can be identified within non-ideal profiles. Presuming EO being a meaningful influencer, variances in the ideal profile of high performers as compared to non-ideal profiles of the remaining set are expected. This knowledge will be essential for the following parts of this section that focus on examining the ideal configurations of EO.

Configurations can also be considered alongside contingencies. For example, Hughes et al. (2007), in one of the only studies of its kind, applied such an examination to study the configuration of EO and its effects on firm performance among young technology-based firms involved in network relationships and found deleterious effects on EO-performance when firms deviated from an ideal profile (configuration) but also when the learning was excessively focused on knowledge acquisition activity (contingency factor).

Lumpkin and Dess (1996) theorised that not all the dimensions of EO might be beneficial for performance (empirically demonstrated by Hughes and Morgan, 2007 and others), although Miller (1983) was evident in his argument that firms must possess all dimensions of EO to a high level to be entrepreneurial. It is this rather stark dichotomy that creates a theoretical puzzle surrounding what form of EO is genuinely best for performance: a contingency form or a configurational form. Configuration theory eschews two assumptions held in contingency theory. First, that not all dimensions of a construct are inherently as valuable or as desirable as each other, and second that what is necessary for optimal performance may well differ across alternative groups of firms. This envisions a fundamentally different view of 'context' that changes it from a control variable typical under contingency theory to one that is central to the consideration of 'fit' under configuration theory (see Zahra & Wright, 2011; Zahra, Wright & Abdelgawad, 2014 for a debate about the absence of context in entrepreneurship and EO research).

Contingency and Configurational Conceptual Development

According to previous studies, the linkage of two variables is dependent on the level of a third one (Miller, 1983; Rauch et al., 2009; Rosenberg, 1968). Thus, to include moderators in a relationship may help limit potential misinterpretation and allow a more precise and fine-grained consideration of relationships (Lumpkin & Dess, 1996; Rauch et al., 2009). Consequently, to target this study's aims, it was necessary to consider contingency as well as configurational views for a more holistic perspective.

Covin and Slevin (1991) have initially suggested that a comprehensive firm-behaviour-model of EO is required to include the individual, environmental, and organisational variables. Their research does not explicitly recommend the use of neither contingency nor configurational theories but created the basis for a multidimensional conceptualisation as suggested by Lumpkin and Dess (1996) (see also Wales, 2016). Hence, referring to Wales (2016), a current theoretical framework with regards to EO should usually integrate strategic considerations as well as organisational and environmental characteristics (Wiklund & Shepherd, 2005).

Literature has discussed a variety of relevant variables on the EO-performance linkage towards research (Kraus et al., 2012; Lumpkin & Dess, 1996; Zahra & Covin, 1995; Zahra & Garvis, 2000). There is little consensus on the most suitable EO-performance influencers as they are dependent on the firm context and study goals in every sample (Rauch et al., 2009; Zahra et al., 2014). Internal (Wiklund & Shepherd, 2003) as well as external factors (such as Tan & Tan, 2005) have been identified. Emerging from their meta-analysis, especially Rauch et al. (2009) were one of the first who called for future research to treat industry characteristics as impacting variables on the EO-performance linkage that require an urgent investigation. This need is due to their suggestions for a stronger association between EO and performance in high-tech intensive firms, whereas industry has commonly been included as the control variable and not repeatedly investigated as a moderator (Rauch et al., 2009; for industry type as a mediating variable refer to Choi and Williams, 2016). Refer to section 2.10.1 on research gaps.

Even though literature has presented various empirical reasons for the use of different kinds of moderators, to date, only a selected few have been examined (Rauch et al., 2009; Zahra et al., 2014). Wiklund and Shepherd (2005), for example, have been one of the first scholars to implement the configurational theory and include a specific moderator in their work. Miller (1990) reasoned that entrepreneurial strategies are more likely to succeed if a firm takes customer perspectives in the form of premium products/services into account. This kind of a dynamic environment is said to be driven by highly uncertain customer and competitor settings, increased by irregular market changes and industry conditions (Dess and Beard, 1984; Miller, 1987; Wiklund & Shepherd, 2005). As industries evolve constantly and opportunities grow and/or decrease, firms are required to adapt the fit of an entrepreneurial and strategic orientation to their environment. Wiklund and Shepherd (2005) concluded that this has a positive effect on business performance while the dynamic and/or munificent environments act as moderating variables in the EO-performance linkage.

While including contingencies, certain strategies, processes, and environmental components tend to cluster. This observation is due to the need for a joint implementation with the configurational approach (Meyer et al., 1993; Miller, 2011; Wiklund & Shepherd, 2005). More recently, Covin and Lumpkin (2011), Miller (2011), Shirokova et al. (2016) as well as Wales (2016) have suggested that both contingency and configurational theories will be highly relevant to future EO research. Thus, evaluating the joint associations of an EO configuration and its contingencies to performance, moderated by industry characteristics, is considered as being highly valuable within EO research (see also Wiklund & Shepherd, 2005).

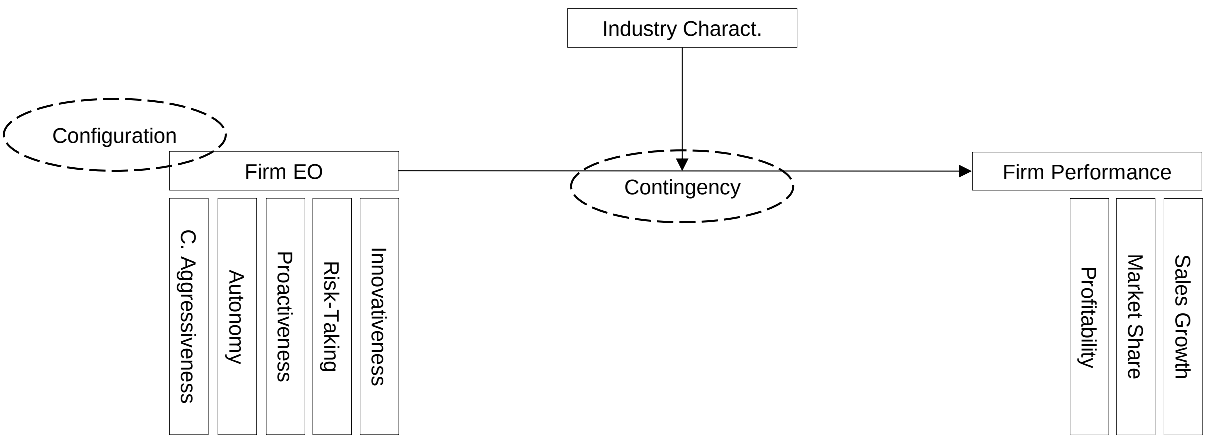


Figure 9: Theoretical Framework: Contingency and Configurational Views

In reference to the identified research gaps (see section 2.10.2), Figure 9 displays a diagrammatic view on this thesis' framework by, firstly, addressing the configurational nature of an EO's multi-dimensions to answer the question around what is the ideal profile of EO in one industry type compared to another (RQ1) and by, secondly, considering contingencies to evaluate whether each EO dimension affects performance consistently across industry types and the manner in which these are impacted by characteristics (RQ2, RQ3), while also considering EO under temporality (RQ4).

Ultimately, where the SCP model may be restricted to analyse specific industry input, to apply contingencies and configurations allows the integration of both firm and industry perspectives into this research's framework. Moreover, by understanding the different aims of the contingency and configurational approach, it is only through their combined implementation that a clearer insight into this study's objectives can be drawn.

3.1.2. Conceptual Agreement on the EO Framework

This section will align the selected research questions with acknowledged theoretical models to find a conceptual agreement on the EO framework. This agreement includes the clarification of independent variables, dependent variables as well as the moderator variables while also referring to temporal considerations.

Previous debates display the tendency of EO research to study the three uni-dimensions whereas this research will evaluate the effect of the five multi-dimensions on various business performance indicators impacted by industry characteristics over a certain time-period as seen in Figure 10.

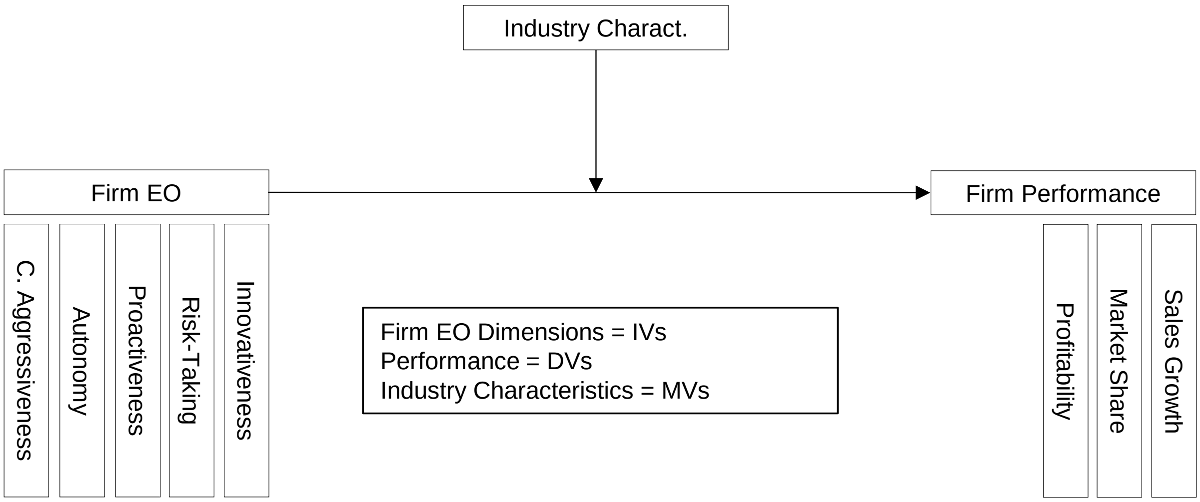


Figure 10: Theoretical Framework: Conceptual Agreement on an EO Framework

Independent Variable (IV)

Many scholars have accepted and included Miller's (1983) approach according to which an entrepreneurial firm "engages in product market innovation, undertakes somewhat risky ventures, and is first to come up with 'proactive' innovations, beating competitors to the punch" (p.771). Lumpkin and Dess (1996) offer a contrary perspective as per which EO can only be coherently classified based on its five dimensions, extending the unidimensional perspective into a multidimensional one. These five dimensions are to be examined in the course of this thesis.

Lumpkin and Dess (1996) have defined EO as methods, practices, and decision-making styles that allow top-level managers to act entrepreneurially; therefore, it can be considered to be a strategic orientation. In contrast to Miller (1983), Lumpkin and Dess (1996) have suggested that different firms may develop a diverse dimensional intensity. To be considered as entrepreneurial, some dimensions may not be required by a firm at all. Hence, throughout this thesis, according to the multidimensional approach, each dimension will be examined independently to receive greater insights on a firm's EO. Thus, the five EO dimensions will be considered to be independent variables (IV) as part of the contingency and configurational approach.

Dependent Variable (DV)

The linkage of EO dimensions towards performance has found strong consideration throughout the past few years; however, it is mostly unclear how each dimension maps onto the firm performance. As discussed throughout previous sections, there have been positive EO-performance associations (e.g., Rauch et al. 2009; Wiklund, 1999; Wiklund & Shepherd, 2003, 2005; Zahra, 1991; Zahra & Covin, 1995) as well as exceptions to these (e.g., Covin & Slevin, 1990; Hart, 1992; Hughes & Morgan, 2007; Mentzer, & Özsomer, 2002; Morgan & Strong, 2003). The reasons for the different reports on the EO-performance linkage remain to be investigated. Moreover, this research also focuses on understanding if EO is universally beneficial or not and whether some dimensions are mandatory for secured business performance. Thus, based on the contingency approach, individual financial performance indicators will be considered to be dependent variables (DV).

Temporal Considerations

Lumpkin and Dess (1996) have implied that one EO dimension may lead to favourable outcomes whereas another may not due to differing firm or industry conditions over time. Scholars agree that as firms change, so does the nature of their EO. As per this, an organisation's age, size as well as industry characteristics distinguish its needs to a great level (see Table 2, page 38 and Table 3, page 40). Moreover, initially Mendelson and Pillai (1999) have argued that industry types are driven by their clock speed, which influences the external environment of a firm and affects its internal operations as well. These are referred to as the dynamic environment or industry turbulence (Rauch et al., 2009). Furthermore, industry munificence denotes the extent to which an environment can support sustained growth (Dess & Beard, 1984; Rosenbusch et al., 2013). Due to their identified potential importance as influencers, both industry turbulence and munificence will find due consideration within this thesis.

From a temporal perspective, most studies have not tested the impact of industry characteristics towards firm EO in a strict sense (Rauch et al., 2009). Thus, the EO-performance linkage will be evaluated in a sample that captures a more extended period of EO across multiple years to eliminate the here raised concerns (such as a study period of three years).

Moderator Variable (MV)

EO research is urged to become more explicit and context-specific when investigating the conceptual intentions of Lumpkin and Dess (1996). Resulting from the here presented research gaps (section 2.10.2), the effects of industry characteristics (industry types and conditions) onto the EO-performance relationship are to be tested. Firstly, according to Rauch et al. (2009), differences in the EO-performance relationship were found between high-tech and non-high-tech/less-tech intensive firms, with a stronger linkage in the former industry group. As this differentiation has barely been studied – it has the potential to provide helpful insights into the mechanisms that determine EO within specific industry types. Throughout this thesis, the industry types of high-tech versus less-tech are differentiated. Secondly, Miller (2011) has pointed out that a majority of scholars have failed to specialise their research into specific industry lifecycles (such as Miller, 1983; Zahra and Covin, 1995; Matsuno, Mentzer, & Özsomer, 2002). Related to lifecycle stages, here, industry conditions find consideration under an industry's turbulence and munificence rate. Thus, the industry characteristics of types (HT versus LT) will be regarded as comparison variables while the industry conditions will be considered as the moderator variables (MV) to evaluate how these may affect the relationship between IV and DV.

3.2. Hypotheses

In reference to this study's research questions 1 through 4, this section will outline the ten hypotheses to be tested.

3.2.1. Targeting RQ1: The Ideal Profile Configuration of the EO Multi-Dimensions under Consideration of Industry Types of HT and LT

Research has set the empirical ground for a different EO-performance linkage driven by various types of organisational and environmental factors (Wiklund & Shepherd, 2005). However, according to the propositions of Kreiser and Davis (2010), the call for considering the various configurations of a firm's EO dimensions including environmental contexts have missed attention by earlier scholars. Following configurational theory, the ideal combination of all five dimensions, as derived from the highest performing firms, portrays the ideal EO profile for businesses to maximise performance (Hughes et al., 2007; Kearney et al., 2017). Hence, firm performance may be increased by an optimal alignment (Naman & Slevin, 1993) of the EO dimensions (Hughes et al., 2007 & 2017), but any deviation from that will risk creating a sub-optimal contribution to firm performance. This observation implies the need for a 'perfect' or 'ideal' fit of those dimensions to each other, deviance from which might (or would be expected to) undermine firm performance in comparison to the 'better configured' rivals. Theoretically, this is consistent with the overriding concern in Lumpkin and Dess' (1996) conceptualisation of EO against the Miller/Covin and Slevin perspective: that each dimension of EO is capable of inflicting positive or negative contributions to firm performance. Hughes and Morgan (2007) provided the first test based on these theoretical concerns and supported it empirically, followed by a study (Hughes et al., 2007) which advised young venture firms about the importance of the overall configuration of EO to firm performance.

Nevertheless, previous EO initiatives have missed to investigate the configurational theory under different industry types (refer to Rauch et al., 2009) and to operationalise firm performance according to various measures (Gupta & Wales, 2017) as targeted along with research question 1. Especially industry was repeatedly named as critical control respectively moderating variable to be assessed for defining indicators for increasing business performance (Rauch et al., 2009); therefore, it is strongly suspected that the optimal configuration of EO is not linear and depends on a precise mix of its dimensions, however, that mixture will not be symmetrical across industry types. Firms being regarded as high-tech intensive may need other ideal configurations of EO to have an advantageous effect on performance since their technology and customer trends develop more rapidly than compared to less-tech intensive ones. This perspective contrasts with a plethora of studies (see the examples from the meta-analysis of Rauch et al., 2009) that persist in researching the EO-performance relationship as a linear phenomenon.

As developed from urgent gaps in EO research (see section 2.10.2), considering the multidimensionality of EO, it is, firstly, hypothesised that the ideal configuration of a firm's EO is associated with significantly different degrees of optimal performance across the defined industry types, and, secondly, that deviation from an ideal profile of EO is negatively linked to firm performance. Thus, the following hypotheses have been set forth:

H1: The configuration of EO dimensions associated with optimal performance is not the same across industry types of high-tech and less-tech.

H2: Deviation from an ideal profile (configuration) of EO dimensions is negatively related to firm performance.

Being equipped with the hypotheses targeting RQ1 and the configurational approach, a diagrammatic presentation of H1 and H2 is provided in Figure 11.

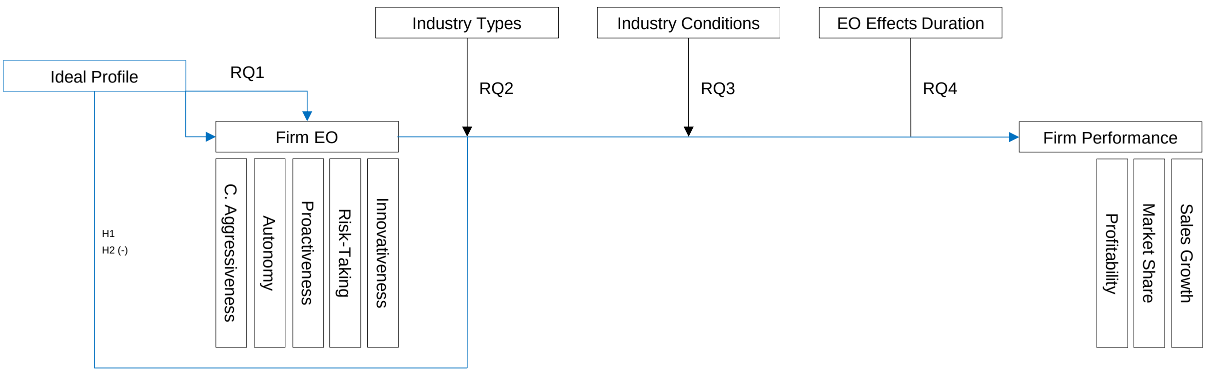


Figure 11: Hypotheses: Hypotheses H1 and H2 Targeting RQ1

3.2.2. Targeting RQ2: The Relationship of the Five Multi-Dimensions with Performance Moderated by Industry Types

To be entrepreneurially oriented, firms require stable and recurring patterns of the known dimensions of EO (Wales, 2016). In reference to Rauch et al. (2009), differences of the impact of the EO-performance relationship between high-tech and non-high-tech/less-tech intensive firms are expected, caused by varying environmental drivers on the firm. Following the extensive review of current EO research, within this study, it is anticipated that a stronger linkage is present in the former industry group. Under the focus of industry types, how each of the five multi-dimensions maps onto various performance measures (Gupta & Wales, 2017), has missed evaluation by previous initiatives. Therefore, along with research question 2, a universal main-effects model of EO-performance is challenged by providing evidence that a direct effects evaluation will be incomplete and, consequently, that such contingency requires a multidimensional assessment. This independent perspective is advanced by introducing the industry types as moderating variables into this linkage. Throughout the following, further justification on the underlying logic behind H3 to H7, according to the five dimensions of EO, is provided.

Innovative firms are said to promote creativity, technological inimitability, and to have a strong focus on R&D in order to develop and market novel products or services that are targeted to the individual and changing needs of the customer (Hughes & Morgan, 2007). Innovativeness may occur if a firm actively implements solutions that are not typical at a certain point in time (Hurley & Hult, 1998) and may result in a strengthened positioning in the current market or easier access to enter new ones (Cho & Pucik, 2005; Garud & Nayyar, 1994; Hult & Ketchen, 2001). Such a firm may differentiate itself from competitors by developing unique solutions and/or undermining those of the competitors (Hughes & Morgan, 2007 & 2017). See section 2.3.1 for further insights into previous research on a firm's innovativeness.

Following the conceptualisation of EO by Lumpkin and Dess (1996), including more recent works (Schueler et al., 2018; Wales, 2016), innovativeness has been acknowledged to be a significant contributor towards firm performance and its growth (see also Brüdel & Preisendörfer, 2000; Hughes & Morgan, 2007). By encouraging creative thinking and innovative activities within firms, this dimension, moreover, is said to contribute to its competitive advantage (Calantone, Çavuşgil, & Zhao, 2002; Hughes & Morgan, 2007). Innovative activities may carry short-term costs; however, their contribution towards firm changes, which are required to answer to customer needs, are expected to benefit business performance in the long run.

Therefore, innovativeness may help firms boost their standing in a particular industry. Due to quickly emerging product or service innovations through R&D in technologies, the EO-performance relationship is expected to have a much more positive effect on business outcomes in high-tech than in less-tech intensive firms. Hence, following the discussed critical gaps in EO research (see section 2.10.2), it is hypothesised that the innovativeness-performance linkage is more strongly moderated by the high-tech versus the less-tech industry type. As such, the following is hypothesised:

H3: Firm innovativeness is more strongly (positively) related to business performance in high-tech than in less-tech industries.

As performance will not be considered as an overall measure but will instead be examined according to its various indicators, the following analyses and results (chapter 5) will refer – with respect to innovativeness – to the following subdivided hypotheses for the specific performance measures: H3a for sales growth, H3b for market share, H3c for gross-profit-margin, and H3d for return on assets.

Next, risk-taking refers to a firm's willingness to commit resources to implement projects, activities, and solutions that are highly uncertain in their subsequent results (Lumpkin & Dess, 1996; Hughes & Morgan, 2007). When deciding for a risky alternative, a firm is given two options – that of either taking the risk to fail (triggered by fear) or the risk to miss an opportunity (triggered by inaction) (Dickson & Giglierano, 1986). Both the tolerance of risk-taking that promotes firm activities and working with uncertainty and timely risk-taking linked to the speed of strategic decision making have been associated with being beneficial towards firm outcomes (Eisenhardt, 1989; Rauch et al., 2009). Its absence may result in the delayed introduction of innovative products/services, missed explorative activities, and failed adaptions to industry changes, which, consequently, may limit performance improvements (Hughes & Morgan, 2017). See section 2.3.2 for further insights into previous research of a firm's risk-taking.

Resulting from Lumpkin and Dess' (1996) EO conceptualisation, risk-taking has been described as the constructive basis for generating explorative and exploitative activities. Caused by uncertainty, a firm's management commonly commits resources before fully understanding the predominant actions that must be taken as an answer to market and industry needs (Covin & Slevin, 1991; Rauch et al., 2009). These needs do not exist for an unlimited period of time. Moreover, as with a firm's innovativeness, risk-taking may carry costs as well (Hughes & Morgan, 2007), whereas its willingness to accept the risk and challenge existing firm settings may result in long-term performance improvement.

To take on risks is expected to have a positive effect on performance outcomes as this attribute may allow for a quick adaptation to uncertain situations by applying technological changes to their own business, especially for high-technology industries. Following the discussed urgent gaps in EO research (see section 2.10.2), it is hypothesised that the risk-taking-performance linkage is more strongly moderated within the high-tech industry than within the less-tech one. As such, the following is theorised:

H4: Firm risk-taking is more strongly (positively) related to business performance in high-tech than in less-tech industries.

As performance will not be considered as an overall measure but will instead be examined according to its various indicators, the following analyses and results (chapter 5) will refer – with respect to risk-taking – to the following subdivided hypotheses for the specific performance measures: H4a for sales growth, H4b for market share, H4c for gross-profit-margin, and H4d for return on assets.

A proactive acting firm is said to promote a forward-thinking viewpoint according to which it continually aims to develop and implement improved or novel products or services, adapts promising changes to existing strategies, and localises opportunities in the industry (Hughes & Morgan, 2007; Lumpkin & Dess, 1996). In the short-term, this may unlock a first-mover advantage; in the long-term, it may impact the development of a whole industry type (Lumpkin & Dess, 1996). Moreover, it could also increase the firm’s ability to answer to market and industry signals while gaining an understanding of the actual and changing customer needs. See section 2.3.3 for further insights into previous research on a firm’s proactiveness.

Following the conceptualisation of EO by Lumpkin and Dess (1996), proactiveness has been equated with improving business performance due to a firm’s increased responsiveness to industry signals (e.g., Day & Wensley, 1988; Wright, Kroll, Pray, & Lado, 1995). Proactive firms tend to remain a step ahead of their less responsive competitors (Hughes & Morgan, 2017). This advantage is accomplished by actively preparing and implementing the process of change which could result in an easier positioning within a specific industry or in better foreseeing the changes in customer needs (Lumpkin & Dess, 1996). Hence, proactiveness is said to grow business performance as it allows the firm to understand customers, thereby answering their needs, and providing superior offers as opposed to their competitors (Hughes & Morgan, 2007).

The complexity of proactiveness lies in the fact that it contains a clear time and temporal dimension: the firm must act in advance as opposed to others to demonstrate proactiveness and gain its purported benefits. By extension, there is an implicit assumption that sufficient change is taking place in the firm's business and product-market environments (or industry) to mean that variation in the speed of detecting these changes and their response to them is both likely and potentially beneficial if acted upon either rapidly or in advance. Such a scenario is expected to be far more likely in high-technology industries. Thus, it is hypothesised that the proactiveness-performance linkage is more strongly moderated by the high-tech as opposed to the less-tech intensive industry type. As such, the following is theorised:

H5: Firm proactiveness is more strongly (positively) related to business performance in high-tech than in less-tech industries.

As performance will not be considered as an overall measure but will instead be examined according to its various indicators, the following analyses and results (chapter 5) will refer – with respect to proactiveness – to the following subdivided hypotheses for the specific performance measures: H5a for sales growth, H5b for market share, H5c for gross-profit-margin, and H5d for return on assets.

Firms promoting autonomy are said to encourage top-level employees to self-directed, independent, and creative working styles to allow for the development and championing of new ideas for their entrepreneurial success (Lumpkin & Dess, 1996). To achieve this, firms are required to empower employees, encourage open communication, provide unlimited access to knowledge, and allow them to think and act independently (Rauch et al., 2009; Spreitzer, 1995). This enablement may motivate employees to perform outside the commonly stipulated firm restrictions and actively contribute to corporate change and entrepreneurial activities (Hughes & Morgan, 2007). See section 2.3.4 for further insights into previous research of a firm's autonomy.

As conceptualised by Lumpkin and Dess (1996), autonomy has been acknowledged to be beneficial towards firm performance as it is indispensable when it comes to flexibly answering to market and industry changes by rapidly adapting the firm's activities (such as Grewal & Tansuhaj, 2001; Rauch et al., 2009). Here, flexibility refers to a top-level management employee's ability and choice to quickly drive actions in a direction that may be required by market or industry pressures (Hughes & Morgan, 2007). Its absence would lead to inactiveness and, ultimately, to a less responsive market reaction. Hence, embracing autonomy within the firm may allow employees to work more instantaneously and possibly allow the firm an edge over its industry competitors.

Many business occasions may call for an autonomous behaviour – usually, these are circumstances that demand an unplanned response as new situations regularly emerge around business changes in industries. This observation is expected to have a greater effect within fast-pacing high-tech intensive firms rather than less-tech ones. As such, within a less-tech intensive firm, autonomy may be far less beneficial or even disadvantageous because it causes distraction from the refinement and improvement of tasks and streamline activities. Hence, following discussed urgent gaps in EO research (see section 2.10.2), it is theorised that the autonomy-performance linkage is more strongly moderated by the high-tech as opposed to the less-tech intensive industry type. Thus, the following is hypothesised:

H6: Firm autonomy is more strongly (positively) related to business performance in high-tech than in less-tech industries.

As performance will not be considered as an overall measure but will instead be examined according to its various indicators, the following analyses and results (chapter 5) will refer – with respect to autonomy – to the following subdivided hypotheses for the specific performance measures: H6a for sales growth, H6b for market share, H6c for gross-profit-margin, and H6d for return on assets.

Competitive, aggressive firms are said to consistently attempt to outpace their industry rivals (Lumpkin & Dess, 2001). This fact is accomplished by leveraging their adaptive capabilities, such as by committing resources to start direct actions against or regular assessments of competitors (Hughes & Morgan, 2007). It may result in the destabilisation of a contestant's position in the industry, which is a contrast to their passive competition. See section 2.3.5 for further insights into previous research of a firm's competitive aggressiveness.

Following Lumpkin and Dess' (1996) conceptualisation of EO, competitive aggressiveness has been regarded as being beneficial towards business performance since it would strengthen a firm's competitiveness by scaling down a contestant's market stand. This advantage may comprise aggressive prices, the introduction of new products or services to the market, or using unconventional tactics (Hughes & Morgan, 2007). Restricting the competitors to acknowledge what the aggressive firm will do next may boost its performance outcomes.

Competitively acting has been identified as being a healthy contributor for firms to sustain in their industry. According both industry types, the business performance of high-tech intensive ones is expected to benefit more from aggressive firm behaviour as it may leverage higher R&D spendings or relevant capabilities in answer to technological trends that may ease the process of outpacing rivals. Hence, following the discussed important gaps in EO research (see section 2.10.2), it is hypothesised that the competitive aggressiveness-performance linkage is more strongly moderated by the aforementioned industry type. As such, the following is hypothesised:

H7: Firm competitive aggressiveness is more strongly (positively) related to business performance in high-tech than in less-tech industries.

As performance will not be considered as an overall measure but will instead be examined according to its various indicators, the following analyses and results (chapter 5) will refer – with respect to competitive aggressiveness – to the following subdivided hypotheses for the specific performance measures: H7a for sales growth, H7b for market share, H7c for gross-profit-margin, and H7d for return on assets.

Being equipped with the hypotheses targeting RQ2, a diagrammatic presentation of H3 to H7 is provided in Figure 12. It illustrates the independent relationship between the five EO dimensions with the defined firm performance measures that is moderated by the industry types (high-tech and less-tech intensive).

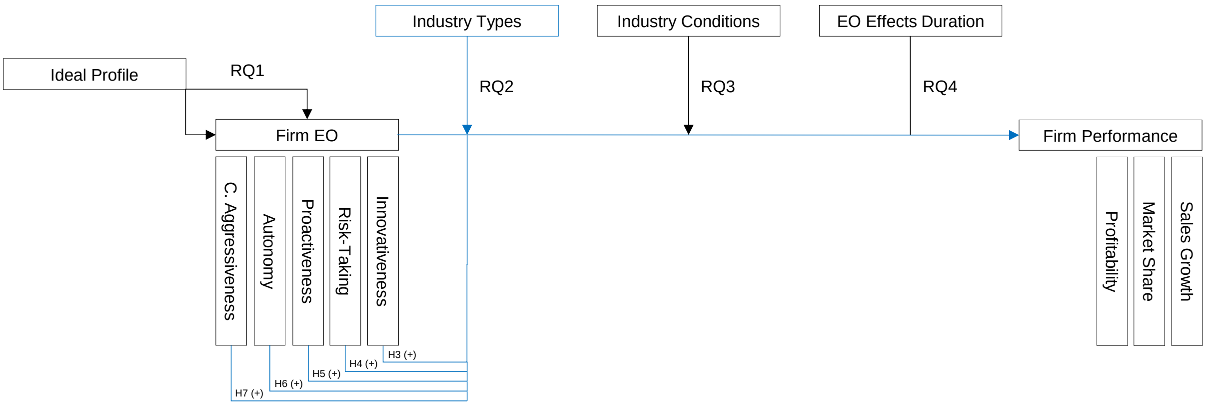


Figure 12: Hypotheses: Hypotheses H3 to H7 Targeting RQ2

3.2.3. Targeting RQ3: The Relationship of the EO Dimensions with Performance Moderated by Industry Conditions

There exists only limited practical knowledge on the causalities that qualify a firm to profit from a specific environmental setting (Zahra & Wright, 2011; Rosenbusch et al., 2013). Furthermore, the inclusion of environmental factors into the multidimensional conceptualisation of EO and its contingency towards firm performance was largely missed by previous scholars. Yet, the early work of Dess and Beard (1984) has underlined the necessity to conceptualise and measure the organisational task environment (OTE) any firm is facing along the industry conditions of turbulence and munificence (more recently by Magaji et al., 2017; Rosenbusch et al., 2013). Due to industry pressures, it is strongly supposed that a firm's industry turbulence and munificence each have different moderating effects on EO and firm performance in turn (also refer to Rosenbusch et al., 2013). Therefore, research question 3 addresses both industry conditions along with the studied contingency in order to test these initial theoretical justifications. See section 2.4.2 for further insights into previous research on both the industry conditions.

Industry dynamism (*aka* turbulence) relates to the stability of the environment; it may evolve from adapting to customer preferences, developing new products or services, contesting of firms, or progressing new technologies (Stoel & Muhanna, 2009). Due to its stimulation effects on the industry as a whole, consequently on the firm, it is suspected, and therefore, hypothesised that industry turbulence positively moderates the relationship between EO and business performance. Here, the moderating variable of industry turbulence is operationalised as the two variables of turbulence sales and employee stability (in 2012).

Industry munificence refers to the extent to which an environment can support sustained growth (Aldrich, 1979; Rosenbusch et al., 2013). Mature or decreasing industries are categorised as being low on munificence with intense competition, price wars, including advantages for low-priced production (Stoel & Muhanna, 2009). On the other hand, industries with a high munificence rate are expected to have an increasing demand and customer groups (Stoel & Muhanna, 2009). Hence, concerning the multidimensionality of EO, it is hypothesised that industry munificence negatively moderates the linkage between EO and firm performance. Here, the moderating variable of industry munificence is operationalised as munificence sales and employee growth (in 2012).

H8: Industry turbulence positively moderates the relationship between EO and firm performance such that EO will have a greater effect on firm performance when industry turbulence is high rather than low.

H9: Industry munificence negatively moderates the relationship between EO and firm performance such that EO will have a lower effect on firm performance when industry munificence is high rather than low.

As performance will not be considered as an overall measure but rather examined according to various indicators, the following analyses and results (chapter 5) will refer – with respect to an industry's turbulence and munificence – to the following subdivided hypotheses for the specific performance measures. Relating to industry turbulence: H8a for sales growth, H8b for market share, H8c for gross-profit-margin, and H8d for return on assets and with respect to industry munificence: H9a for sales growth, H9b for market share, H9c for gross-profit-margin, and H9d for return on assets.

Being equipped with the hypotheses targeting RQ3, a diagrammatic presentation of H8 and H9 is provided in Figure 13. It illustrates the linkage of EO and performance being positively moderated by industry turbulence and negatively moderated by industry munificence.

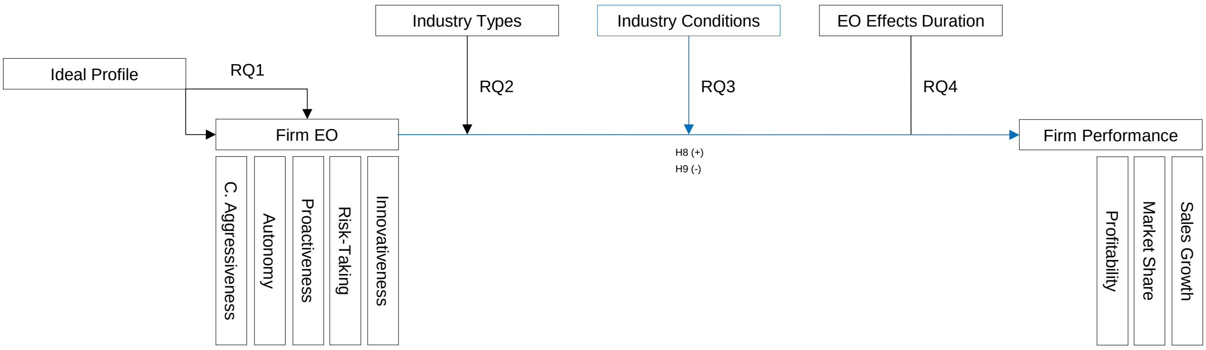


Figure 13: Hypotheses: Hypotheses H8 and H9 Targeting RQ3

3.2.4. Targeting RQ4: The Relationship of the EO Dimensions with Performance under Temporal Considerations

Only a few studies on the multidimensional EO-performance linkage – when accounting for temporal dimensionality – have been conducted to date (refer to Rauch et al., 2009; Zahra et al., 2014). Within their conceptualisation, Lumpkin and Dess (1996) have already suggested that firms change and based on that, so does the nature of their EO. Thus, the evolvement of firm age, size, and other environmental factors over time may determine a firm's needs and its EO-performance relation (Wales et al., 2011) which is to be investigated along with research question 3.

According to Wales (2016), firms have to syndicate managerial decisions with entrepreneurial behaviours to being able to handle upcoming entrepreneurial actions of uncertainty. Furthermore, a study on long-term orientation (Lumpkin et al., 2010), a concept to assess the impacts of firm activities and their results, presented long-term effects of certain EO dimensions. Therefore, firms may realise sequenced phases of high (entrepreneurial behaviour is existent) and low (entrepreneurial behaviour is not existent) levels of EO (refer also to Rauch et al., 2009). This effect sets the expectations that the EO multidimensions have varying impacts on performance over time and that a certain firm initiative may require a dedicated lead-time to positively affect firm performance. This concept was predominantly referred to as the temporal dimensionality of EO (refer to Wales et al., 2011 and section 2.7).

Thus, it is anticipated that the effects of EO will last longer than its initial time or investment period. It is hypothesised that EO set forth at one point in time may positively affect (not moderate) the firm's performance over a period of three years since EO-performance outcomes are expected to demand time to be measurable.

H10: EO has a positive effect on 3-year firm performance.

As performance will not be considered as an overall measure but rather examined according to various indicators, the following analyses and results (chapter 5) will refer – with respect to temporal considerations of EO – to the following subdivided hypotheses for the specific performance measures. H10a for sales growth, H10b for market share (not tested as data for the corresponding years was not available), H10c for gross-profit-margin, and H10d for return on assets.

Consequently, the hypothesis 10 targets RQ4. For an improved insight, a diagrammatic presentation of H10 is provided in Figure 14.

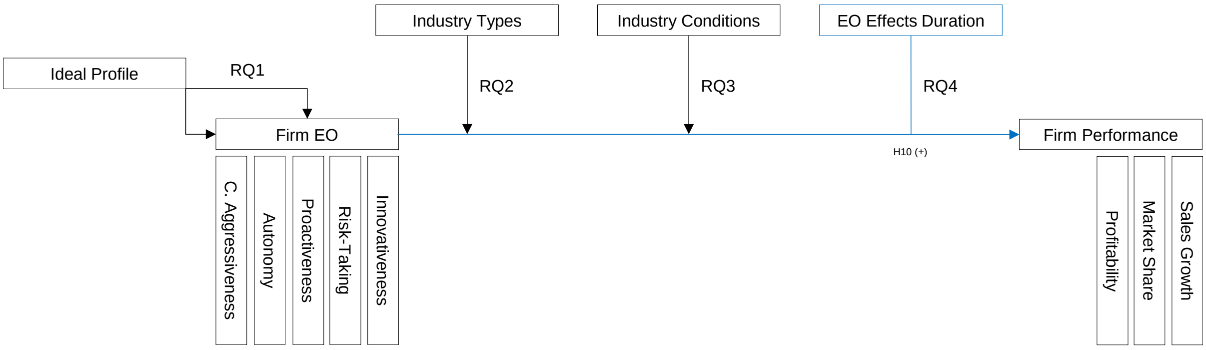


Figure 14: Hypotheses: Hypothesis H10 Targeting RQ4

Ultimately, the following hypotheses can be summarised:

<u>Referring to Research Question 1:</u>

H1: The configuration of EO dimensions associated with optimal performance is not the same across industry types of high-tech and less-tech.

H2: Deviation from an ideal profile (configuration) of EO dimensions is negatively related to firm performance.

<u>Referring to Research Question 2:</u>

H3: Firm innovativeness is more strongly (positively) related to business performance in high-tech than in less-tech industries.

H4: Firm risk-taking is more strongly (positively) related to business performance in high-tech than in less-tech industries.

H5: Firm proactiveness is more strongly (positively) related to business performance in high-tech than in less-tech industries.

H6: Firm autonomy is more strongly (positively) related to business performance in high-tech than in less-tech industries.

H7: Firm competitive aggressiveness is more strongly (positively) related to business performance in high-tech than in less-tech industries.

Referring to Research Question 3:

H8: Industry turbulence positively moderates the relationship between EO and firm performance such that EO will have a greater effect on firm performance when industry turbulence is high rather than low.

H9: Industry munificence negatively moderates the relationship between EO and firm performance such that EO will have a lower effect on firm performance when industry munificence is high rather than low.

Referring to Research Question 4:

H10: EO has a positive effect on 3-year firm performance.

CHAPTER 4: RESEARCH PHILOSOPHY, DESIGN, AND METHODOLOGY

The following chapter will present this study's research philosophy, design, and methodological approach by further classifying the sample selection, measurement implications, data collection, data validity and reliability, and ethical considerations.

4.1. Research Philosophy, Design, and Methodology Outlook

This section aims to provide an understanding of this research's philosophical standpoint that has guided the foundation of this thesis. These beliefs focus on an epistemological consideration and research design as the methodological approach.

4.1.1. Research Philosophical Position

In order to understand the academic circumstances of a study, a researcher is required to ensure that the scholarly work is grounded on a strong theoretical foundation (May, 2011). By building an association between such a theoretical foundation and the research's philosophy including its design, the interdependence between the theory and research can be bridged to define a well-founded concept for further analysis (May, 2011).

Concerning the general theories of knowledge, two essential areas of philosophy in science have been defined: ontology and epistemology (Klakegg, 2016). Firstly, ontology, a branch of metaphysics, refers to the philosophy of the overarching nature of what things are, while dealing in the most basic terms with the kind of things that actually exist. For example, with the questions of "What is existence?" and "What is the nature of existence?". Secondly, epistemology, a branch of philosophy pertaining to the theory of knowledge, deals with the grounding of knowledge itself, its possibilities, scope, and overall basis (Klakegg, 2016), such as with the questions of "How do we know things?" and "How do we know what is true?"

(Article from University of Idaho, 2018). Therefore, epistemology defines methods for understanding the truth while ontology questions what is true.

It is not the philosophical aim of this study to outline an ultimate answer around the constitution of the impact of EO on performance. Instead, the philosophical position targeted here desires to answer the specific research questions that will then aid in creating the basis for further inquiries that can be addressed by subsequent studies. Concluding that, there will hardly be a final answer which is an essential philosophical belief of this work. Consequently, even though this study adds to the current body of EO knowledge through novel and conclusive findings, it is to be admitted that the data on any subject advances with time and research (Holden & Lynch, 2004). Therefore, the evolving knowledge of the impact of the multidimensional EO on business performance concerning various contextual implications will inspire future studies on the same. These contributions arise from a philosophical understanding of epistemology.

In attempting to outline an enhanced understanding of EO through unique contributions, this thesis will additionally, and therefore research, various levels of explanatory power concerning the four research questions. This study, for example, will investigate to what level each EO dimension needs to be configured to be considered as ideal and to what extend this ideal varies across the two industry types of high-tech and less-tech intensive (refer to RQ1). Conclusively, the findings will not attempt to find definite answers due to the aforementioned natural evolution of knowledge. Instead, this research is motivated by the aim of improving the current understanding of an EO conceptualisation and what aspects are needed to be included by theorists to define the phenomena of EO multidimensionality in even greater detail.

Epistemology as a theory of knowledge has multiple possible stances of which a theorist can select, such as positivism, empiricism, hermeneutics, and critical theory (Klakegg, 2016; Outhwaite, 1987). While all stances have been greatly critiqued and have evolved in their meaning and knowledge contribution over the years, the perspective of positivism follows the primary motivations of this research, and has, therefore, been selected for this study. Compared to all other stances, positivism has the strongest focus on acceptability, validity, and the generalisability of the defined arguments. It emphasises empirical data collection, allows statistical analysis, and permits mathematical and logical proof of a hypothesis while the gained knowledge is built from and based on measurable observations.

While quantitative epistemologies have been related to stress the verification and confirmation of theory, qualitative epistemologies have been linked to focus on the generation or discovery of theory (Bryman, 1984). The chosen epistemological perspective for this thesis builds on the quantitative approach as its explorations are more objective than its qualitative counterpart. This includes the analysis of numerical statistics and empirical examination (Blanche et al., 2006; Zikmund et al., 2013). The quantitative approach especially aids the data analysis of a large sample frame of high and less-technology intensive firms which would not be practicable with a qualitative approach such as one performed through a survey design. Furthermore, quantitative inquiries are mostly employed by positivists and are appropriate for a descriptive research design (refer to the following section and Zikmund et al., 2013). These typically involve a quantifiable set of assessable hypotheses in order to examine the relationships between variables based on regression. Therefore, the quantitative epistemological perspective aids an explanatory research design that best suits this study's objectives.

4.1.2. Research Design and Methodology

The research design aims to provide a set of methods and procedures to best clear the outlined problem by providing guidance for selecting the sample, defining the study measures, collecting the data, while also ensuring data validity and reliability (Marczyk et al., 2017; Zikmund et al., 2013; refer also to Gali, 2018). This knowledge is critical to the entire strategy of a scholarly work as it enables matching the researcher’s objectives with an appropriate framework of study.

Typically, research designs are segmented into either exploratory or confirmatory approaches (Blaikie, 2009; Zikmund et al., 2013). Exploratory designs are characterised as the starting point of constructing a theory. With the aim of explaining uncertain situations, this design is flexible in nature while focussing on the discovery of new ideas and insights of a phenomena. Due to its extremely unstructured basis and initial conceptualisation that has not been investigated by previous scholars, it generally does not offer decisive outcomes (Marczyk et al., 2017; Zikmund et al., 2013). Confirmatory designs, on the other hand, aid researchers when a theory is defined in literature already. These may be addressed by localising the gaps within the same. These gaps can then be addressed via distinctive research questions through the guidance of the existing theory to challenge, extend, reject, or support it (Zikmund et al., 2013; refer also to Gali, 2018).

Confirmatory design can be further categorised into, firstly, causal and experimental, or, secondly, descriptive approaches (Marczyk et al., 2017; Zikmund et al., 2013). An experimental approach is best applied when causal relationships with a clear problem statement are to be assessed. Herein, the theorist is aware of causes and effects under observation (Blanche et al., 2006; Zikmund et al., 2013). These prerequisites include the researcher’s isolated clear cause-effect hypotheses that are to be evaluated and the ability to manipulate the independent variable. Meanwhile, descriptive research is performed when the linkage of two variables is in focus. Therefore, the descriptive approach is typically applied onto two or more clearly defined hypotheses with a well justified and structured problem statement (Blanche et al., 2006; Zikmund et al., 2013). These hypotheses will then support the researcher to gain increased knowledge regarding the outlined research questions and phenomena. However, the descriptive approach focusses less on gathering facts; instead, it aids in relating the findings to pre-developed theories by defining solutions for problems and supporting knowledge on the hypotheses (Marczyk et al., 2017; Zikmund et al., 2013).

The selection of an appropriate research design shall be driven by the objectives of the study, the research questions, and philosophical standing. While an exploratory approach is understood as efficient in nature to produce new paths in research, it suffers the necessity to be assessed and structured further (Marczyk et al., 2017; Zikmund et al., 2013). Therefore, since the confirmatory descriptive research approach is able to deliver well-defined and structured outcomes on specific relationships and its variables, it was selected as the research design for this thesis. The motivation of this scholarly work is to increase the existing knowledge of the multidimensional EO construct by measuring the effects of EO and its dimensions on various performance measures while also including the context and time component into the relationship. Therefore, and due to the inclusion of a clearly outlined theoretical framework of configurations and contingencies as the basis for hypotheses development (refer to section 3.1) as well as to make explicit predictions within the acknowledged explanatory constraints, the author considers this choice as most suitable.

Descriptive studies can be further classified into two common types, that of cross-sectional and longitudinal. Firstly, cross-sectional designs are mostly referred to as survey designs (Bryman, 2015) that extract a quantitative set of data from a snapshot of a single point in time to test relationships between variables. The longitudinal type mainly differs from the cross-sectional one by the introduction of time into the design. While this study does not follow the longitudinal type of research in a strict sense, major parts of this thesis involve the investigation of EO over time for which reason this work is clearly advancing from common cross-sectional studies. The time component has been added to this research, for example, with respect to the hypotheses of RQ3 on the moderating effects of the industry conditions on the EO-performance relationship and of RQ4 on the temporal effects of the multidimensionality of EO on business performance. This focus will support the investigation of the various variables in the defined construct.

To conclude, the choice of the research design must be appropriate, and therefore aligned with the research questions and hypotheses a study aims to address. Following the initially outlined objectives of this research (refer to section 1.2) and driven by the availability of previous literature on the topic to define clear and well-structured gaps and hypotheses, an attempt has been made to explain the selected epistemological research position of this work that is positivistic, of a quantitative type, confirmatory and descriptive in its core while also including a temporal component into the research design. The following sections will discuss the finer aspects of this research on the steps taken to select the sample, measure the variables, and generate the required information in order to build a robust set of data to validate the construct in question.

4.2. Sample Selection and Classification

In brief, the proposed hypotheses were tested in a sample of US companies drawn from the Standard & Poor 500, a stock market index based on the market capitalisations of 500 large companies, and selected to provide a relatively equal representation of high-tech and less-tech intensive companies as determined by their industry types. Levels of the five EO dimensions were examined by using computer-aided text analysis along with a set of keywords advanced from Short et al.'s (2009) research to extract values from the letters to shareholders and 10-K filings in the firms' annual reports. Performance indicators and information related to the moderator and control variables were sourced from COMPUSTAT. This sourcing enabled testing for the effects of contextual moderators. Further justifications are provided in the following sections.

4.2.1. Classification of Industry Sectors and Types

The sampling frame of Standard & Poor 500 was compiled and further refined by using the North American Industrial Classification System (NAICS) that was released in 1997 as it allows for a precise classification of industry types. NAICS was derived from the initial Standard Industrial Classification (SIC) system to categorise industries by using codes that clearly identify firms according to their industries, subsector, and industry groups. NAICS codes have a length of six digits wherein the first five are the same for all North American countries. Table 6 displays the meanings of each code level. Multiple firms can share the identical six-digit NAICS code such as Microsoft and Oracle (NAICS: 511210 - Software Publishers).

Table 6: Sample Selection: North American Industry Classification System (NAICS) Code Explanation

Code Level	Explanation	Relevant Digits
level 1	largest business sectors	two-digit codes
level 2	subsectors	three-digit codes
level 3	industry groups	four-digit codes
level 4	NAICS industries	five-digit codes
level 5	national industries, e.g. Canada	six-digit codes

To identify firms for both high-technology (high-tech intensive; HT) and less-technology (less-tech intensive; LT) industry types, it was necessary to outline their categorisation requirements. The basic understanding of firms within high-tech industries – as being ones that use or involve advanced methods and the most modern equipment – is furthered to include firms that engage a highly skilled workforce and R&D while explicitly concentrating on new technologies that could replace existing ones (Doran & Gunn, 2002; Traynor & Traynor, 2004). Throughout the past, HT firms focused predominantly on technological advantages for a competitive edge. Today, this is no longer enough. Consequently, these firms have gradually also begun concentrating on marketing efforts to aid their competitive standing (see Traynor & Traynor, 2004). As a result, HT firms may be located in various sectors within NAICS. Moreover, most of the technology measurement indicators refer to firm expenditures on R&D

and the proportion of the workforce that is engaged in scientific and technological tasks (Malecki, 1991). The availability and comparability of this data make such indicators the only practical solution (Paytas & Berglund, 2004). Following a shared understanding (personal perception) of the author, here, initially, each of the two-digit NAICS industry sector codes was manually matched to the industry types, as displayed in Table 7, whereas some industry sectors could be of either a HT or LT nature.

Table 7: Sample Selection: NAICS 2 Classification Structure & Industry Type Classification

NAICS 2-digit Code	Industry Sector	General Industry Type Classification
11	Agriculture, forestry, fishing and hunting	LT
21	Mining, quarrying, and oil and gas extraction	HT/LT
22	Utilities	LT
23	Construction	LT
31	Manufacturing	HT/LT
32	Manufacturing	HT/LT
33	Manufacturing	HT/LT
41	Wholesale trade	LT
42	Wholesale trade	LT
44	Retail trade	LT
45	Retail trade	LT
48	Transportation and warehousing	LT
49	Transportation and warehousing	LT
51	Information and cultural industries	HT/LT
52	Finance and insurance	LT
53	Real estate and rental and leasing	LT
54	Professional, scientific and technical services	HT/LT
55	Management of companies and enterprises	LT
56	Administrative and support, waste management and remediation services	LT
61	Educational services	LT
62	Health care and social assistance	LT
71	Arts, entertainment and recreation	LT

72	Accommodation and food services	LT
81	Other services (except public administration)	LT
91	Public administration	LT
99	Unclassified	LT

Nevertheless, when sampling the population according to this approach, it soon became clear that the two-digit NAICS code lacks accuracy in an effort to classify single firms solely under either HT or LT. As stated by Dess and Beard (1984), the same applies to the four-digit SIC industries with an average specialisation ratio of 90%. However, these comprise heterogeneity in their employment, technology, organisational structure, and so on. Thus, operationalising the concept of technological industries has produced mixed results due to different categorisation approaches. Paytas and Berglund (2004) noticed this as well and in turn reinvented the classification of technology-based industries. In reference to their study, a majority of such technology categorisations depend on industry-level input mainly and fail to capture firm activities and their actual technological sophistication (Paytas and Berglund, 2004). Moreover, the lack of availability and compatibility of data made the previous classifications even less reliable (Malecki, 1991). These authors were among the first to translate the obsolete SIC codes into the six-digit NAICS codes to map them onto industry types.

Arguing that a universal definition of high-technology intensive firms is not viable, Paytas and Berglund (2004) developed two lists comprising of NAICS codes that focused on technology-based employment and the generation of technological innovations (see also Markusen, Hall, & Glassmeier 1986; Thompson, 1988). This perspective was based on the measures of expenditures on R&D and the workforce involved in science and technology-related professions. Consequently, it was noted to provide clear indications of a firm’s technological level (Malecki, 1991).

The utilised industry data that formed the basis of the here applied classification system has to be consistent and comprehensive. Paytas and Berglund (2004) debated that the National Science Foundation's Survey of Industrial Research and Development provides figures on R&D spending by industry and employment; hence, it may be helpful with regards to studying an industry's innovativeness. However, this survey does not reliably display statistics on all of the two to four-digit NAICS codes. Using the U.S. Bureau of Labour Statistics' Occupational Employment Statistics (OES), Chapple et al. (2004) defined a set of science and engineering intensive professions in the form of three-digit SIC industry codes. Later, in 2002, this was matched to the two- and five-digit industry levels (Paytas and Berglund, 2004), which initiated the conversion to NAICS. Following the professions defined by Chapple et al. (2004), the Carnegie Mellon University Center for Economic Development (CED) converted these into the four and six-digit NAICS codes. This approach enables a more fine-grained categorisation of high-technology versus less-technology intensive firms due to a more specific firm classification. According to this, Paytas and Berglund (2004) classified the six-digit NAICS codes as technology-intensive when their occupations surpassed the national average by three times within a single list. Table 8 summarises all six-digit NAICS codes comprising of high-technology intensive employers as a robust and reliable definition of the HT industry types. This list was used as the basis for this doctoral study's classification of HT firms, assuming that the firms on all other NAICS codes were less-technology intensive (LT). A dataset of all common six-digit NAICS codes was sourced (classcodes.com, 2016), verified, and used (agreement rate of 100%) in conjunction with the appropriate authoritative councils to check their validity. Following that, Paytas and Berglund's classification of HT firms was manually added to the list of all common NAICS codes. With regards to the missing NAICS codes from the list of common codes (as discovered when referring to the study's actual sample), additions in the form of LT industry types were made.

Table 8: Sample Selection: NAICS 6 Classification Structure & Industry Type Classification (HT)

NAICS 6-digit Code	NAICS Description	Paytas and Berglund (2004) Technology Employers - HT
211100	Oil and Gas Extraction	HT
211111	Crude Petroleum and Natural Gas Extraction	HT
325100	Basic Chemical Mfg.	HT
325110	Petrochemical Mfg.	HT
325120	Industrial Gas Mfg.	HT
325131	Inorganic Dye and Pigment Mfg.	HT
325182	Carbon Black Mfg.	HT
325188	All Other Basic Inorganic Chemical Mfg.	HT
325192	Cyclic Crude and Intermediate Mfg.	HT
325199	All Other Basic Organic Chemical Mfg.	HT
325400	Pharmaceutical and Medicine Mfg.	HT
325411	Medicinal and Botanical Mfg.	HT
325412	Pharmaceutical Preparation Mfg.	HT
325413	In-Vitro Diagnostic Substance Mfg.	HT
325414	Biological Product (Except Diagnostic) Mfg.	HT
333200	Industrial Machinery Mfg.	HT
333210	Sawmill and Woodworking Machinery Mfg.	HT
333220	Plastics and Rubber Industry Machinery Mfg.	HT
333292	Textile Machinery Mfg.	HT
333293	Printing Machinery Mfg.	HT
333294	Food Product Machinery Mfg.	HT
333295	Semiconductor Machinery Mfg.	HT
333298	All Other Industrial Machinery Mfg.	HT
333300	Commercial and Service Industry Machinery Mfg.	HT
333313	Office Machinery Mfg.	HT
333314	Optical Instrument and Lens Mfg.	HT
333315	Photoic and Photocopying Equipment Mfg.	HT
333319	Other Commercial and Service Industry Machinery Mfg.	HT
334100	Computer and Peripheral Equipment Mfg.	HT
334111	Electronic Computer Mfg.	HT

334113	Computer Terminal Mfg.	HT
334119	Other Computer Peripheral Equipment Mfg.	HT
334200	Communications Equipment Mfg.	HT
334210	Telephone Apparatus Mfg.	HT
334220	Radio and Television Broadcasting and Wireless Communications Equipment Mfg.	HT
334290	Other Communications Equipment Mfg.	HT
334300	Audio and Video Equipment Mfg.	HT
334310	Audio and Video Equipment Mfg.	HT
334400	Semiconductor and Other Electronic Component Mfg.	HT
334412	Bare Printed Circuit Board Mfg.	HT
334413	Semiconductor and Related Device Mfg.	HT
334414	Electronic Capacitor Mfg.	HT
334415	Electronic Resistor Mfg.	HT
334417	Electronic Connector Mfg.	HT
334418	Printed Circuit Assembly (Electronic Assembly) Mfg.	HT
334419	Other Electronic Component Mfg.	HT
334500	Navigational, Measuring, Electromedical, and Control Instruments Mfg.	HT
334510	Electromedical and Electrotherapeutic Apparatus Mfg.	HT
334511	Search, Detection, Navigation, Guidance, Aeronautical, and Nautical System and Instrument Mfg.	HT
334512	Automatic Environment Control Mfg. for Residential, Commercial and Appliance Use	HT
334513	Instruments and Related Products Mfg. for Measuring, Displaying, and Controlling Industrial Process Variables	HT
334514	Totalizing Fluid Meter and Counting Device Mfg.	HT
334515	Instrument Mfg. for Measuring and Testing Electricity and Electrical Signals	HT
334516	Analytical Laboratory Instrument Mfg.	HT
334517	Irradiation Apparatus Mfg.	HT
334519	Other Measuring and Controlling Device Mfg.	HT
336400	Aerospace Product and Parts Mfg.	HT
336411	Airplane Mfg.	HT
336412	Aircraft Engine and Engine Parts Mfg.	HT

336413	Other Aircraft Parts and Auxiliary Equipment Mfg.	HT
336419	Other Guided Missile and Space Vehicle Parts and Auxiliary Equipment Mfg.	HT
423400	Professional and Commercial Equipment and Supplies Merchant Wholesalers	HT
511200	Software Publishers	HT
511210	Software Publishers	HT
516100	Internet Publishing and Broadcasting	HT
517900	Other Telecommunications	HT
518100	Internet Service Providers and Webs Search Portals	HT
518111	Internet Service Providers	HT
518200	Data Processing, Hosting, and Related Services	HT
541300	Architectural, Engineering, and Related Services	HT
541310	Architectural Services	HT
541330	Engineering Services	HT
541370	Surveying and Mapping (Except Geophysical) Services	HT
541380	Testing Laboratories	HT
541500	Computer Systems Design and Related Services	HT
541511	Custom Computer Programming Services	HT
541512	Computer Systems Design Services	HT
541600	Management, Scientific, and Technical Consulting Services	HT
541700	Scientific Research and Development Services	HT
541710	Research and Development in the Physical, Engineering, and Life Sciences	HT
541720	Research and Development in the Social Sciences and Humanities	HT

To summarise, Paytas and Beglund's (2004) classification system was selected due to the clear indication of NAICS codes belonging to a specific industry type. This consideration prevents possible sampling errors resulting in misclassified firms. Moreover, it allows this research to successfully operationalise previously failed efforts to conceptualise technology industries and to eliminate the huge generalisation of either SIC or two-digit NAICS codes through a more streamlined six-digit classification. As previously discussed, Paytas and Beglund's (2004) data source was a combination of the research from the Carnegie Mellon

University’s Center for Economic Development (established in 1987 as an applied research centre bringing academic resources to bear on key issues in economic development) coupled with a study from the Bureau of Labor Statistics (2002) and occupations identified by Chapple et al. (2004) (published in the Economic Quarterly, which has been cited by a number of papers within the same field). These underline the reliability of using their sampling approach. Furthermore, only firms that are listed in the Standards and Poor’s 500 index were selected for the sample since literature equalises medium to large firms (regardless of their age) to benefit from adopting certain entrepreneurial mind-sets in highly competitive environments (Short et al., 2009), which is crucial to this study’s aims. As S&P 500 comprises publicly traded firms, further variables such as performance indicators were collected from existing – and especially valid – secondary data. For the range of 2007 to 2015, a S&P 500 list of firm names, their ticker codes (known as “TIC”), and revenues was sourced and stored in an initial Microsoft Excel database (sourced from siblisresearch.com, 2016 as it provides all data separated for the appropriate duration). Assuming that a firm must execute a minimum level of firm-level entrepreneurial orientation over time, only firms that were consistently represented on the list for at least three years were considered for later analyses. As 2012 was chosen for measuring EO, this duration was set for the time span of 2010 to 2012. Referring to this, 497 observations for 2012 were recorded.

Starting a query in COMPUSTAT’s “Monthly Updates – Fundamentals Annual” subscription service on the 497 firms’ ticker codes from 2012, a dataset of 491 observations for industrial (not financial) services (COMPUSTAT metric) was reported. The data range comprised of the date variable “Fiscal Year” and the date range “2012-01 to 2013-01”. Screening variables included the following: Consolidation Level “Consolidated”, Industry Format “Industrial”, Data Format “Standard”, Population Source “Domestic”, Currency “USD”, and Company Status “Active” and “Inactive”. To enrich the query’s outcome, the following COMPUSTAT variables were added: Company Name, Ticker Symbol, Fiscal Year-End, North American Industry Classification Code, Standard Industry Classification Code, S&P Industry Sector Code, Revenue – Total, Sales/Turnover (Net), Employees, Pro Forma Net Sales – Current Year, Pro Forma Net Sales – Previous Year, and Market Value – Total.

4.2.2. Classification of Firm Groups and Sample Criterion 1 and 2

Resulting from the screening for industry classifications and the selection of NAICS as an appropriate industrial classification system, groups of medium and large firms are – due to their data availability – codified to be integrated into this study's sample. According to the Small Business Act (SBA), there are two widely used size standards for small firms. These are, firstly, firms with less than 500 employees for most manufacturing and mining industries, and, secondly, firms with $7.5 million in average annual receipts for many nonmanufacturing industries (SBA, 2016). For this sample's construction, a standard and straightforward methodology was required to prevent different size standards across industry sectors. Hence, medium to large firms have been considered as those that have more than 500 employees each. Within this, the firm size is a sample criterion. From the sample population of 491 firms, four employed less than 500 individuals (consequently, these were excluded). Hence, reviewing the sample criterion one, 487 observations remained.

An additional criterion was that firms were required not only to have been founded in 2012 or before but also to have been consistently represented in S&P during the actual time of the study (2012 to 2015). This condition helped with studying their EO through these years. Consequently, firm age has been employed as another criterion. Within the sample, after applying this criterion two, 451 observations remained upon excluding 36 firms.

4.2.3. Manual Adjustment 1: Missing NAICS Codes of Firms

The NAICS codes were part of the COMPUSTAT export. For all observations, these codes were matched with an industry type of either HT or LT according to the classification by Paytas and Berglund (2004). Resulting from that, 99 HT and 307 LT firms were reported. However, due to missing NAICS codes and limited NAICS digits from the COMPUSTAT export, 45 firms were without code ("#N/A"). By "manual adjustment 1", the missing six-digit NAICS codes were sourced from the company websites in question and added to the dataset. After mapping these to Paytas and Berglund's (2004) categorisation, 101 HT and 350 LT firms remained (451 in total).

4.2.4. Manual Adjustment 2: Firms expected to be HT

To correct the treatment for further sampling errors, all 451 observations were manually screened and reviewed by the researcher according to the common understanding (personal knowledge) of industry types ("manual adjustment 2"). Here, all previously classified HT firms were regarded as the same; however, within the LT group, 42 firms were concluded as being more HT than LT from a typical understanding of technology-based firms and consulting their definitions. For example, from their codes, Amazon, eBay, and General Electric were classified as less-tech but are commonly considered to be more high-tech intensive.

4.2.5. Manual Adjustment 3: Final List

As the next step ("manual adjustment 3"), the NAICS codes of the 42 previously identified firms were manually reviewed to determine whether firms within the LT group that have the identical NAICS codes must be considered as being more HT as well. Combining adjustment 2 and 3, 54 firms were identified to be more HT than LT. As a result, these were added to the former group. Ultimately, the final list comprises 155 HT and 296 LT firms.

4.2.6. Inter-Rater Reliability

In order to assess the inter-rater reliability as well as the consistency of Paytas and Berglund's (2004) codification and the database that was constructed based on the process, criteria, and procedures described above, the classification of firms was performed again separately by a knowledgeable, qualified, and independent person (professor/subject matter expert on S&P

500 firms as researched within this area before). This task allowed the researcher to verifying the accuracy of the classification and to determining whether an inter-rater agreement statistic on the classification of firms can be reported.

This second coder was provided with a list of all 451 previously identified firm ticker symbols and names in the form of a Microsoft Excel list. In a third column, the person was asked to mark each firm as being of either the HT or LT industry type without the seeing the original classification made by the researcher. No further explanations or instructions of what the firm may be classified as (which industry type) was given. The only information that was provided to enable this process was the general definition of firms engaging in high-technology industries as discussed within section 4.2.

As an initial result, an agreement rate of 81.5% was reported. This result represents an agreement index of 125 out of 155 HT and 241 out of 296 LT firms. No initial agreement on 30 HT and 55 LT firms (85 firms in total) was achieved. For those firms where an agreement was ultimately reached, no further verifications were performed as a certain reliability of these classifications from the two different sources (Paytas and Berglund (2004) and the second coder) was assumed to be satisfactory. For the firms in which the initial non-agreement was apparent, a discussion with the second coder was arranged to arrive at a negotiated conclusion to understand which opposing classification was accurate and whether a further agreement could be arrived at. The intention was to ensure that no firm was wrongly classified either by the first coder (researcher) or the second coder and to increase, as far as is possible and legitimate, the number of firms to be included in the analysis. Moreover, this dialogue helped both parties to verify the classifications bearing non-agreement in reference to the research aims and criteria and to check for accuracy. After discussing these 85 firms from the database, the following was reported:

(A) In the case of HT firms according to Paytas and Berglund's (2004) classification as well the manual adjustment: Within the dialogue, the researcher and second coder agreed to move specific firms of specific industries, such as “Crude Petroleum and Natural Gas Extraction” (NAICS: 211111), “Petroleum Refineries” (NAICS: 324110), “Other Motor Vehicle Parts Mfg.“ (NAICS: 336390) and others, from LT to HT (within the second coder list). As a result, an overall agreement of 147 out of 155 HT firms was reported (non-agreement: 8 firms).

(B) In the case of LT firms according to Paytas and Berglund’s (2004) classification as well as the previous manual adjustment: Throughout the dialogue, firms of “Paper Bag and Coated and Treated Paper Mfg.” (NAICS: 322220), “Paint and Coating Mfg.” (NAICS: 325510), “Air Conditioning and Warm Air Heating Equipment and Commercial and Industrial Refrigeration Equipment Mfg.” (NAICS: 333415), “Pump and Pumping Equipment Mfg.” (NAICS: 333911) and other industries were moved from HT to LT (within the second coder list). This task resulted in an overall agreement of 281 out of 296 firms being classified as LT (non-agreement: 15 firms).

(C) As an overall non-agreement, 23 firms were reported. This non-agreement was mainly caused by a disagreement in the industry type classification of a firm’s core business. Firms without agreement were set aside from observations after that step. Thus, the final list comprises 428 out of 451 firms, with an agreement rate of 94.9%. See Appendix 2 for the final list of firms categorised as being either HT or LT.

This list of 147 high-tech and 281 less-tech intensive North American firms served as a sample population. This considerable variety secured the external validity and increased the potential of generalising the results considering the previously discussed importance of contextual firm and industry characteristics (see section 2.4.2).

4.3. Measurement Implications for the Defined Research Variables

Within the following, the measurement implications for the defined research variables will be outlined. These comprise EO, performance, industry type, industry condition, and temporal dimensionality measures.

4.3.1. Measurement Implications: EO

There have been many recommendations in entrepreneurship research on how to measure an EO conceptualisation on the firm-level (Covin & Wales, 2012). These include the Miller/Covin and Slevin (1989) EO Scale – following a unidimensional approach – and the Hughes and Morgan (2007) EO Scale – following a multidimensional approach.

In this study, the levels of the five multi-dimensions of EO within one year were considered to be the IVs. This thesis employed Lumpkin and Dess' (1996) approach by reflecting the scales pertaining to individual EO sub-dimensions (refer to RQ1 through RQ4). Herein, EO was not regarded as the linear sum of its dimensional measures but rather treated as a disaggregated set of constructs (see also Covin & Wales, 2012). The dimensions' distinct relationships to business performance were considered individually, especially to examine how these vary moderated by industry types and conditions (contingency approach). To acknowledge alternative measurement approaches when attempting to capture an EO's multidimensionality, Wales (2016) suggested the use of computer-aided text analysis (CATA) that is relevant to this thesis. This method is explained in section 4.5.

4.3.2. Measurement Implications: Performance

Performance has been considered as the most researched DV in past studies of EO (Gupta & Wales, 2017; Rauch et al., 2009; Wales et al., 2013). With regards to its linkage with EO, this thesis followed individual performance measures along the financial indicators as identified by Lumpkin and Dess (1996). These may include firm sales growth, market share, profitability, and possibly non-financial ones such as overall performance (e.g., indicators that demonstrate success (or failure) to increase the value of firms concerning employee motivation or positive culture; see also Zahra, 1993) and stakeholder satisfaction. For this study, the aforementioned financial measures (sales growth, market share, and profitability) were selected for further analysis (relevant for RQ1 through RQ4).

4.3.3. Measurement Implications: Industry Types

For RQ1 and RQ3, industry types did not require measurement as these were already controlled through the selection and comparison of the sample population being limited to HT and LT firms. For RQ2, on the contingency of EO on performance, the industry types were constructed as dummy variables in order to test whether the EO-performance relationship replicates across the industry types. RQ4 did not require a specification of industry types as the temporal dimensionality of EO was in focus.

4.3.4. Measurement Implications: Industry Conditions

Relevant for the assessment of RQ3, industry conditions were assessed according to an industry’s turbulence and munificence wherein Harris’ (2004) operationalisation was applied. The literature typically uses the average growth in sales over the past four to five years to measure market munificence whereas turbulence is described as the standard deviation of the growth in sales in the industry over the same period (Chen, Crossland, & Luo, 2015; Engelen, Neumann, & Schwens, 2015; Wangrow, Schepker, & Barker III, 2015). In the case of turbulence, Audretsch and Acs (1990) define the term as the absolute value of all employment and contractions within an industry (or firm-size-class). The volume of market growth will direct the resulting amount of further employment within new and existing firms. Greater employment reductions within an industry are directly correlated to an increase in the expansion of other firms and new market entries, hence, affecting the overall amount of turbulence. Harris (2004) further operationalised turbulence through the individual variables of instability in sales, price-cost margin, number of employees, and value added by the firm; munificence, on the other hand, was operationalised through the variables of growth in sales, price-cost margin, number of employees, value-added by the firm, and the total number of establishments. Thus, according to this study's aims and after careful revision of previous operationalisation attempts, industry munificence was associated to the individual variables of a firm's growth in sales and number of employees while turbulence was linked to the stability/instability in sales and number of employees over a four-year period (refer to RQ3).

Furthermore, initially, CATA was considered to be employed to measure an industry sector's turbulence and munificence. This consideration resulted from the same motivations as those for EO based on the creation and analysis of word-lists associated to both industry conditions (turbulence and munificence) along with 10-K filings and LTS (letters to shareholders). However, due to the availability of objective measures (sales and employee numbers), it was decided to not employ the CATA approach for the measures of munificence and turbulence at this stage of research. Nevertheless, this approach is highly recommended for future research in order to receive additional insights into the environmental impactors reflected in firm-published texts.

4.3.5. Measurement Implications: Temporal Dimensionality

EO is assumed to have a positive impact on the firms' financial success in the long-term (Rauch et al., 2009). Targeting an EO's temporal dimensionality along with the assessment of RQ4, this research measured the firms' level of the EO multi-dimensions in a certain year and their performance indicators throughout the following three years (refer to RQ4).

4.3.6. Definition of Control Variables

Following the evaluations of section 4.2, firm size was considered to be a control variable (CV). This measure was determined through the employee numbers for the relevant years, thereby, targeting only the medium- and large-sized firms (unit: 1,000 employees). Additional criteria narrowed the sample selection to firms founded in 2012 (or before) that were consistently represented in S&P 500 during the relevant years of this study (2012 to 2015), thereby, classifying firm age as another CV (unit: years of age). Both control variables were relevant for RQ1 through RQ4.

Within previous studies in the field of firm-level EO, firm age and size have repeatedly been defined as control variables. These include the works and findings of Short et al. (2009), Rauch et al. (2009), Hughes et al. (2007) as well as more recently Miller (2011) and Shirokova et al. (2016). In addition to these, researchers have identified industry as another possible control variable (i.e., Wiklund and Shepherd, 2005). Due to the employment of this environmental measure as moderating variable at multiple contexts and research questions within this study, it was decided to exclude industry as a control variable. Further possible control variables to be assessed by future scholars will be discussed along with section 7.3.2.

4.4. Data Collection

The following section will outline considerations for the data collection of this study.

4.4.1. Data Collection: EO Considerations

Regarding EO considerations, two kinds of documents were collected that best match this study's aims: letters to shareholders and 10-K filings.

Firstly, letters to shareholders (LTS) were employed to research firm-specific EO multi-dimensions. These are written by top-level managers and executives, usually the CEO. They include the portrayal of recent and future firm directions. Such reports are said to provide significant insights into the minds of firm executives (Short et al., 2009) and, therefore, allow access to different strategic orientations such as EO, Market Orientation, or Learning

Orientation (Noble et al., 2002; Short et al., 2009; Wang, 2008; Wang & Chugh, 2010). These reports make a firm's current level of the multi-dimensions measurable.

Commonly, LTS are produced yearly as part of the annual firm report. However, their scope can range from a two-page separate LTS to a hundred pages long annual report including any firm financials, the actual message to shareholders, or even the 10-K filing. During the process of data collection, all single LTS from 2012 were stored and – if applicable – separated where they were contained within the annual reports. The LTS were sourced from the individual firms' investor relations webpages. As a result, 245 LTS of LT and 123 LTS of HT firms were collected. For 36 LT and 24 HT firms no LTS were found (neither on the companies' investor relations platform nor on any other webpage). All firms without an available LTS were contacted via e-mail through their investor relations department to double-check their possible availability. By this additional step, the numbers of collected letters were advanced to 247 LT and 125 HT LTS. Moreover, this helped in the realisation that a majority of firms where no letters were found do not produce them anymore. Below is an exemplary statement provided by Apple Inc. upon contact:

> *"Thank you for your inquiry. Apple does not issue a letter to shareholders. This practice ceased in 1996 when the decision was made to stop production of a glossy-style annual report. Apple has since provided the Annual Report on Form 10-K." (Investor Relations Response February 2017)*

Thus, various firms practice different approaches with respect to the issuance of LTS. These include releasing the letter (i) on an annual basis, (ii) not regularly from year to year, or (iii) not at all. Therefore, firms without LTS in the year 2012 were excluded from further investigation. When collecting the LTS and 10-K filings, it turned out that one firm – Hudson City Bankcorp Inc. – agreed to a buy-out in 2012, hence, was excluded from further analysis as well.

Secondly, as an additional reference document, 10-K filings were collected and saved in separate files. The federal security laws require each publicly traded firm to disclose information on a regular basis. Domestic firms have to submit an annual report on Form 10-K (sourced from sec.gov.com, 2016). In contrast to LTS, as filings, 10-K provide standardised documents that may allow a higher generalisability of EO measures. The form includes a firm's history, executive compensations, risk factors, and other information. This filing allowed further analyses that go beyond Short et al.'s (2009) CATA study and provide additional insights into EO including enriched data validity and the comparability of sample sources. As a result, all 281 10-K filings of LT and 147 of HT firms were collected. Ultimately, a dataset of documents pertaining to HT and LT LTS as well as 10-K filings was created.

4.4.2. Data Collection: Performance Considerations, Industry Types and Conditions

Existing financial and industry characteristics data was retrieved to study performance, industry types, conditions, and temporal dimensionality. This extraction was achieved by obtaining data from COMPUSTAT, a database that contains 300 annual and 100 quarterly data items on more than 24,000 listed firms. WRDS, "Wharton Research Data Services", is an online-based data subscription service, which is offered by the Wharton School of the University of Pennsylvania. In the context of this thesis, this granted access to numerous databases including COMPUSTAT. Relevant data for the defined firm population, as examined within the following, was collected and stored in a Microsoft Excel File. In cases where exports from COMPUSTAT contained missing entries (e.g. Ticker codes or financial figures) such were accessed through the annual reports of the respective firms and added to the Excel list. Moreover, as of FY 2015, 20 firms within the population were inactive, a majority due to acquisition by another firm.

4.4.2.1. Performance Considerations

Performance considerations were assessed according to the individual variables of sales growth, market share, and profitability for the time period from January 2009 to December 2015, resulting in figures for seven fiscal years.

Sales growth (V1) refers to the difference in sales between one year and another (year over year). Hence, for the defined period – by years, sales/turnover (net) figures were collected followed by a calculation of sales growth in percentage decimal values.

Market share (V2) reflects the portion of a market controlled by a particular firm. For identifying the market share of 2012, concentration ratios – yearly totalled industry sector revenues per four- as well as six-digit NAICS codes – were extracted per firm from the United States Census Bureau's online database (https://www.census.gov/econ/concentration.html). Market concentrations are published periodically every five years. Hence, only the 2012 data was collected and used for further analysis while the 2014 data was dropped from the sample. Considering all observations, six out of the four-digit NAICS codes had no revenue data available on the platform (for 2012). For these cases, the more fine-grained six-digit code values were used. For 49 of the six-digit NAICS codes, no revenue data was available. Here, the four-digit data was used. This task was accomplished to receive appropriate data for all firms for the performance indicator of market share. By dividing a firm's total sales per year by the value of the revenue for all firms within that industry sector, its market share in percentage decimal values was calculated. As the six-digit NAICS revenues display a more fine-grained picture of the industry sectors, ultimately, these were selected for further consideration of market share. As displayed in Table 9, the listed industry sectors were represented within the population (to avoid complexity, here, only the two-digit levels are shown).

Table 9: Data Collection: Performance Considerations Market Share

NAICS 2 Code	Industry Sector	General Industry Type Classification (HT, LT, or mixed)
11	Agriculture, forestry, fishing and hunting	LT
21	Mining, quarrying, and oil and gas extraction	HT/LT
22	Utilities	LT
23	Construction	LT
31	Manufacturing	HT/LT
32	Manufacturing	HT/LT
33	Manufacturing	HT/LT
41	Wholesale trade	LT
42	Wholesale trade	LT
44	Retail trade	LT
45	Retail trade	LT
48	Transportation and warehousing	LT
49	Transportation and warehousing	LT
51	Information and cultural industries	HT/LT
52	Finance and insurance	LT
53	Real estate and rental and leasing	LT
54	Professional, scientific and technical services	HT/LT
55	Management of companies and enterprises	LT
56	Administrative and support, waste management and remediation services	LT
61	Educational services	LT
62	Health care and social assistance	LT
71	Arts, entertainment and recreation	LT
72	Accommodation and food services	LT
81	Other services (except public administration)	LT
91	Public administration	LT
99	Unclassified	LT

According to the literature, various factors may impact a firm's profitability (see also Lumpkin & Dess, 1996). Here, a firm's profitability was assessed regarding its gross-profit-margin and return on assets. Gross-profit-margin (V3) was calculated as the percentage in decimal values of sales that exceeds the cost of goods sold for each FY of the defined time period; respectively how efficiently a firm was able to use materials and labour to produce and sell goods. Return on assets (V4) refers to the profit that a firm earns under consideration of its overall resources (assets). It was calculated by dividing a firm's net income by its total assets within a year. Hence, here, profitability refers to variables of gross-profit-margin and ROA that were kept separately for further analysis.

4.4.2.2. Industry Types

The differentiation of the two industry types of HT and LT was applied throughout a previous step within the sample selection (see section 4.2). For the data collection of performance and industry condition measures, this was useful when mapping firm ticker codes to industry types.

4.4.2.3. Industry Conditions

In line with this study's aims, the industry conditions of turbulence and munificence from 2012 were assessed on the S&P 500 firm level. Munificence refers to the variables of firm growth in sales (V5) and growth in employee numbers (V6) as their change from 2009 to 2012 in percentage decimal values (employing a time period of four years). Turbulence, on the other hand, refers to their stability/instability as the variance from the average of the values over a four-year period (from 2009 to 2012) (V7 and V8) in percentage decimal values. This variable was calculated by totalling the firm sales/employee figures of the years of 2009 to 2012 and dividing it by four. Then, the distance of a firm's 2012 value to this average was calculated to describe its turbulence within the same year.

Moreover, for purposes of data validity and further analyses, initially, a CATA analysis was considered to be performed on 10-K filings and LTS to create word lists for both industry conditions. For that task, through the frequent word analysis with the DICTION Software on two papers of the considered industry conditions (Dess & Beard 1984; Harris 2004), an initial word list for both munificence (22 words) and turbulence (34 words) was already created, similar to the process for EO measures (see 4.5.1 for a more detailed description on this process). Levels of the intensity of munificence and turbulence for all firms were extracted for both file sources by using the DICTION Software's dictionary functionality. Due to the availability of objective measures, here, the CATA approach did not find further consideration, however, is suggested to be tested along with future studies in EO research. See Appendix 3 for the steps performed to measure industry munificence and turbulence with CATA including their final list of words.

4.4.3. Overview of the Data Collected by Year

Within the following, it was graphically summarised and highlighted which data was collected to answer research questions 1 through 4 (by year):

<u>Research Question 1: Ideal Profiles of the EO Dimensions of Firms in High-Tech versus Less-Tech Industries</u>

Profiles were defined by following the ideal profile method (see also Hughes et al., 2007 & 2017). These were drawn from the multi-dimensions of high-performing firms. As displayed within the diagrammatic view of Figure 15, for RQ1, LTS and 10-K from 2012 were collected for the population along with firm financial data from 2012 to study the configurational approach and ideal profile of high performers against the remaining population as compared within both industry types. Based on performance indicators in the year of 2012, firstly, the top 5% of the highest performing firms were identified to create a sub-set of ideal performers followed by employing the mean scores on each EO dimension to form the ideal profile (see also Hughes et al., 2007). For the purpose of data reliability, the same was accomplished for the top 10% of high performers. Secondly, to assess the influence on performance, it was examined whether deviation from the ideal profile resulted in variances across industry types for the remaining group in 2012. Consequently, the remaining group comprises respectively 5% and 10% of the poorest performers, leaving 90% and 80% within the middle range of their respective groups. Here, 'performance' refers to overall firm performance (sales growth, market share, and profitability).

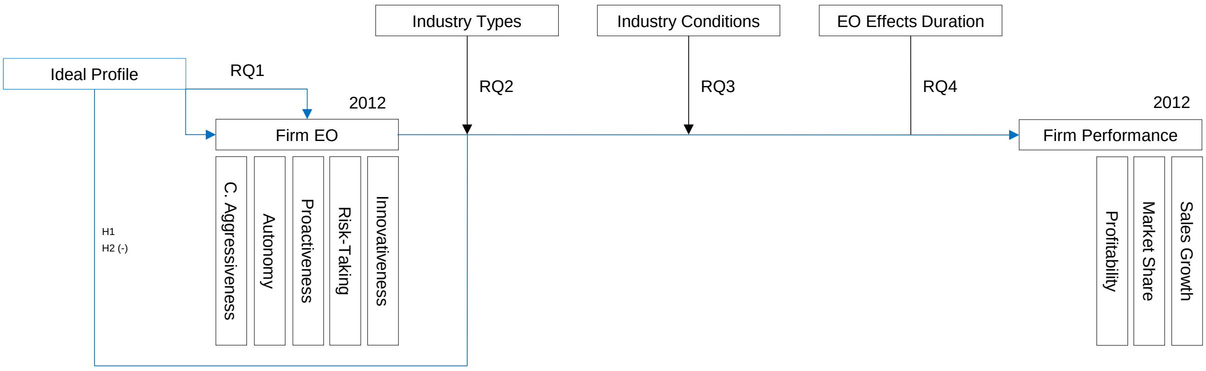


Figure 15: Data Collection: Hypotheses H1 and H2 Targeting RQ1 (data year 2012)

Research Question 2: The Relationship of the Five Multi-Dimensions with Performance Moderated by Industry Types

Figure 16 illustrates the collection of EO, firm age and size as well as performance data from 2012 to target RQ2. This task was furthered by the collection of firm age and size data and their performance indicators from 2014 (Figure 17) to study the contingencies of firm EO and business outcomes as well as their evolvement over time (2012 to 2014). Here, firm age and size in the years 2012 and 2014 were considered as control variables. Results were compared between both industry types of HT and LT according to the three individually defined performance indicators of sales growth, market share, and profitability (comprising of ROA and GPM).

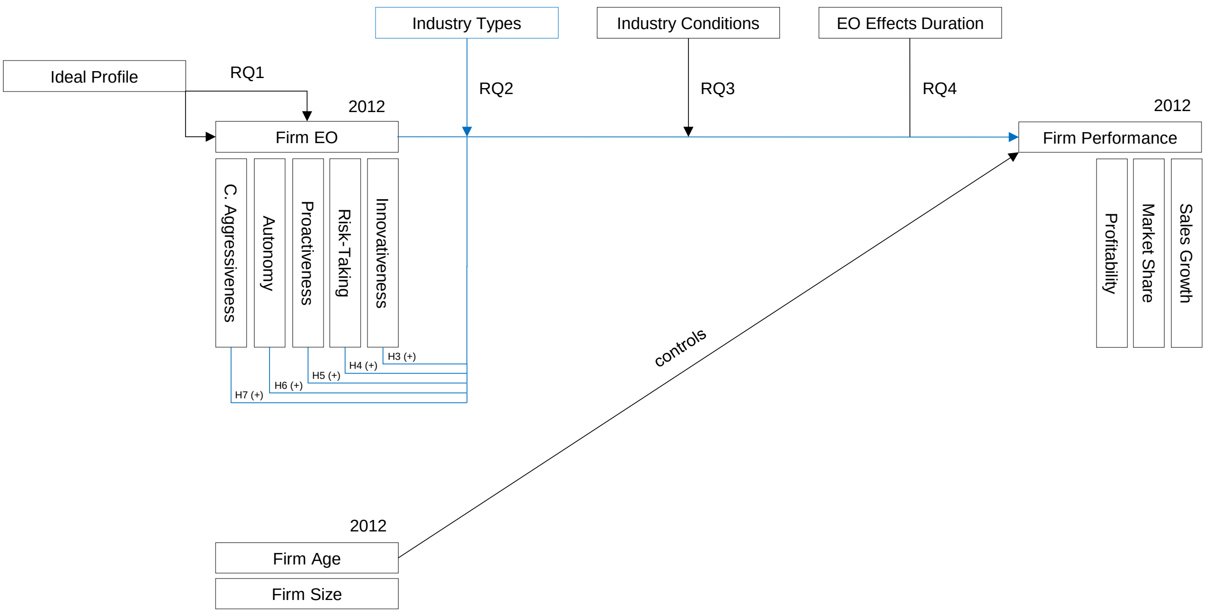


Figure 16: Data Collection: Hypotheses H3 to H7 Targeting RQ2 (data year 2012)

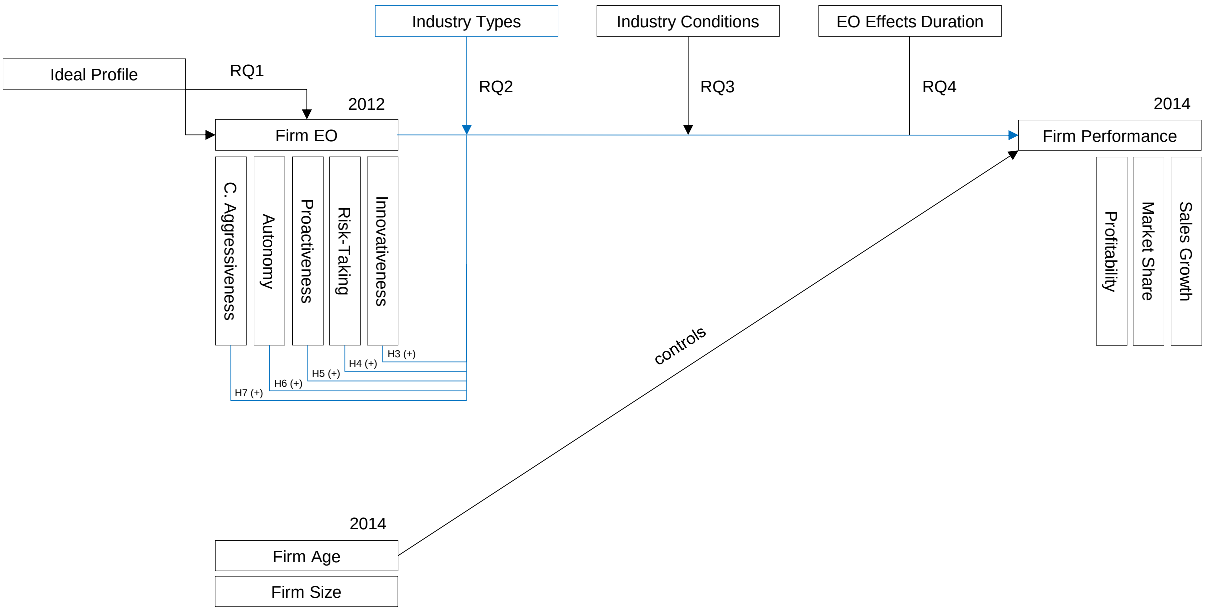


Figure 17: Data Collection: Hypotheses H3 to H7 Targeting RQ2 (performance lagged to 2014)

Research Question 3: The Relationship of the EO Dimensions with Performance Moderated by Industry Conditions

As displayed within Figure 18, RQ3 was evaluated according to firm EO in the year of 2012 impacting firm performance within the same year while this linkage being moderated by the industry conditions of turbulence and munificence (2012) and being controlled by firm age and size (2012). This setting was analysed to investigate whether and how industry turbulence and munificence moderate the relationship between EO and firm performance. For validity purposes, similar to RQ3, this process was repeated with the 2014 performance and firm age and size data as well.

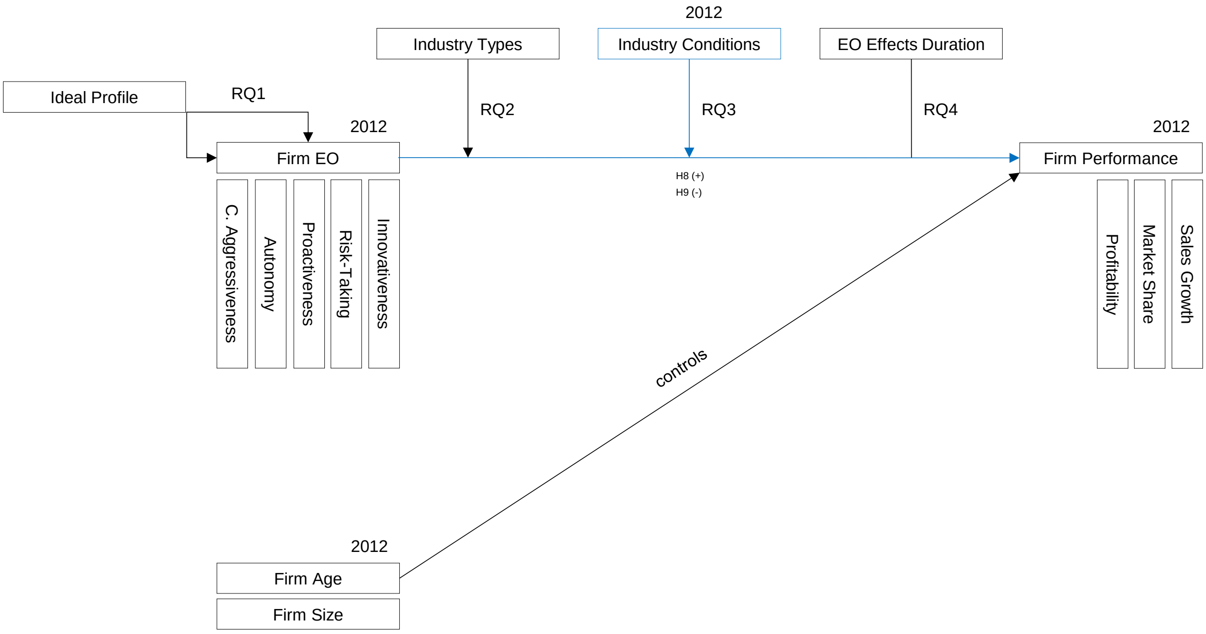


Figure 18: Data Collection: Hypotheses H8 and H9 Targeting RQ3 (data year 2012)

<u>Research Question 4: The Relationship of the EO Dimensions with Performance under Temporal Considerations</u>

Following the diagrammatic view of Figure 19, RQ4 was evaluated according to firm EO in the year 2012 impacting firm performance in the years of 2013, 2014, and 2015 to study whether EO (multi-dimensions) set forth at one point in time has a positive impact on the performance indicators within the following three years. For purposes of data validity, and to check for year-over-year changes, the initial performance data in the year of 2012 found consideration as well. Moreover, the model was controlled for firm age and size of 2012.

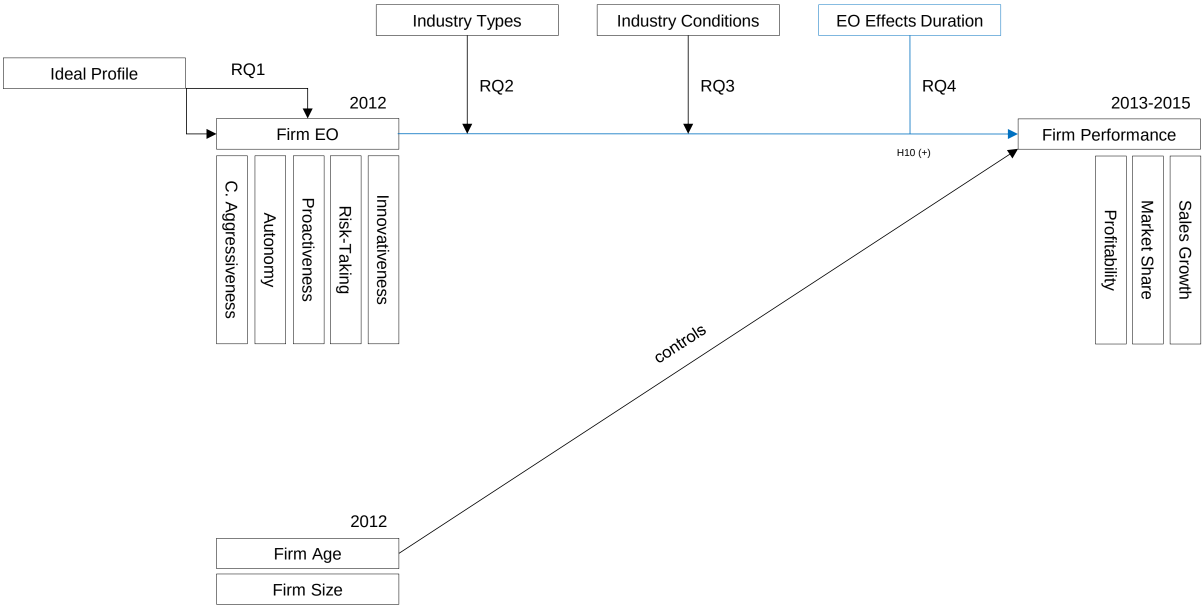


Figure 19: Data Collection: Hypotheses H10: Targeting RQ4 (data year 2013-2015)

4.5. Data Validity and Reliability of the EO Measure

Previous sections establish the relevance of EO in the entrepreneurship and management literature (refer to Lyon et al., 2000; Rauch et al., 2009; Short et al., 2009; Tang et al., 2008), but crucial to this matter is the subject of its measurement (Covin & Wales, 2012). To this end, the empirical studies applied various scales that frequently remove or add items without any further theoretical justification (such as Atuahene-Gima & Ko, 2001; George, Wiklund, & Zahra, 2005). Moreover, Rauch et al.'s (2009) meta-analysis identified a broad differentiation in selections adding or pertaining to EO dimensions whereas Short et al. (2009) called for further research and for scholars to define and ensure more reliable and valid items for measuring the dimensions of EO and their appropriate measurement approaches. Hence, Short et al.'s (2009) suggested steps to enhance the construct validity of EO codings by using CATA were applied throughout this thesis, as seen in Table 10 and discussed thereafter.

Table 10: Data Validity: Recommended Procedures to Enhance Construct Validity When Using CATA (Source: Short et al., 2009)

Step	Description
(1) Deductive content validity	1. Create a working definition of a construct of interest (use a *priori* theory when possible) 2. Initial assessment of construct dimensionality based on existing literature 3. Develop an exhaustive list of keywords from the formal definition to capture the construct of interest. (If the construct is sub-dimensional) hypothesised to be multidimensional, multiple discrete word lists should be created for each 4. Validate word lists using content experts and assess rater reliability
(2) Inductive content analysis	1. Identify commonly used words from the narrative text of interest using DICTION or other CATA software 2. Identify or create a working definition of the construct of interest to guide word selection 3. Identify words that match the construct of interest 4. Establish initial interrater-reliability 5. Refine and finalise word lists
(3) Assess external validity	1. Select appropriate samples and relevant narrative texts to examine the construct of interest 2. Compare two relevant samples when possible
(4) Ensure reliability	Assure reliability by analysing texts using a computer-aided technique such as DICTION, TEXTPACK, WordStat, NVivo, or another that computes word counts (see Neuendorf, 2002, for a review of computer-aided text analysis and associated programs)
(5) Assess dimensionality (for multidimensional constructs)	Assess construct dimensionality using visual inspection of the correlation matrix. If dimensions are uncorrelated, they might be assessing different constructs and dimensions might exhibit problems of convergent validity. If dimensions are correlated over .5, the construct may not be multidimensional. If dimensions exhibit too high a correlation, consider collapsing sub-dimensions to form a single measure (or fewer sub-dimensions)

(6) Assess predictive (nomological) validity	Examine ability to predict theoretically related variables not captured via content analysis using regression, structural equation modelling, or other relevant statistical technique

4.5.1. Data Validity (Deductive and Inductive Content)

To increase data validity, the formal review of the EO construct in firm-level entrepreneurship, the theoretical literature on the dimensionality of the EO construct, and the development of the theoretical framework based on an extensive review of the literature (see section 2.2 to 3.1.2) provided the basis for further analysis.

Following previous discussions (Hughes and Morgan, 2007; Lumpkin and Dess, 1996; Schueler et al., 2018), various scholars have recommended the treatment of EO as a multi-dimensional construct. Doing so allows one to capture a greater range of effects and to determine whether there are differences in its dimensions, which has been acknowledged by Short et al. (2009) as well. Short et al. (2009) made the first attempt at creating a precise and extensive word list for each dimension of EO, relying on information extracted from the Synonym Finder (Rodale, 1978). As displayed in Table 11, to capture its unique dimensions, each word from that list was assigned to one dimension only. Short et al. (2009) validated the original list using a multistep process with different raters. Two reviewers were asked to verify whether each word of that list would match its theoretical definition of EO. If required deletions were made. By using Holsti's (1969) method, the inter-rater reliability of the results from the two raters was demonstrated. Hence, Short et al. (2009) followed their own first four recommended steps for enhancing construct validity when using CATA (for example, Table 10: steps of deductive content validity, inductive content analysis, external validity, and reliability).

Concerning this research, to better adapt to the study's aims and objectives, in the first step, involving inductive content analysis, Short et al.'s (2009) list was reviewed and expanded to capture a fuller range of relevant words and to check for accuracy and completeness while providing the basis for the following CATA analysis. Commonly used words from narrative texts of interest on the five multi-dimensions of EO were identified and it was determined whether Short et al.'s list employs similar words. Specifically passages from Lumpkin and Dess' (1996) and Hughes and Morgan's (2007) seminal papers – in which EO is separated by each dimension – were loaded into the DICTION software. By performing a standard analysis using the "Frequent Word Count" functionality, words were identified that often appear within the narrative texts on the five dimensions. The DICTION export displayed a report on each dimension with all used words from the journal article passages and their frequency (in percentages) within the texts. Only those words that had a count of two or more instances were considered for the revised list. As seen in Table 11, Short et al.'s (2009) findings and the identified words were merged into one table, resulting in a pool of 314 words that were found to be frequently associated with the set of five dimensions (including repetitions).

Table 11: Data Validity: Word Lists for EO Multi-Dimensions (includes words from Short et al., 2009 plus those derived from literature)

Innovativeness	**Short et al. (2009)**	**Risk-Taking**	**Short et al. (2009)**	**Proactiveness**	**Short et al. (2009)**	**Autonomy**	**Short et al. (2009)**	**Competitive Aggressiveness**	**Short et al. (2009)**	**Additional inductively derived words**	**Short et al. (2009)**
activities,		adventuresome,	x	advance,		at-liberty,	x	achievement,	x	advanced,	x
ad-lib,	x	adventurous,	x	ahead,		authority,		aggressive,		advantage,	x
adroit,	x	audacious,	x	anticipate,	x	authority,	x	aggressive,	x	commercialization,	x
adroitness,	x	aversion,		anticipating,		authorization,	x	aggressively,		customer-centric,	x
advertising,		bet,	x	better,		autonomic,	x	aggressiveness,		customized,	x
bright-idea,	x	bold,	x	environment,		autonomous,		ambitious,	x	develop,	x
change,	x	bold-spirited,	x	expect,	x	autonomous,	x	antagonist,	x	developed,	x
changes,		brash,	x	exploiting,		autonomy,		antagonistic,	x	developing,	x
clever,	x	brave,	x	exploration,	x	autonomy,	x	aspirant,	x	development,	x
cleverness,	x	chance,	x	exploratory,	x	decontrol,	x	battle,	x	developments,	x
conceive,	x	chancy,	x	explore,	x	deregulation,	x	battler,	x	emerging,	x
concoct,	x	courageous,	x	first-mover,		distinct,	x	capitalize,	x	enterprise,	x
concoction,	x	danger,	x	forecast,	x	do-it-yourself,	x	challenge,	x	enterprises,	x
concoctive,	x	dangerous,	x	foreglimpse,	x	emancipation,	x	challenger,	x	entrepreneurial,	x
conjure-up,	x	dare,	x	foreknow,	x	flexibility,		combat,	x	exposure,	x
create,	x	daredevil,	x	foresee,	x	free,	x	combative,	x	exposures,	x
creation,	x	daring,	x	foretell,	x	freedom,		compete,	x	feature,	x
creative,		dauntless,	x	forward-looking,		freedom,	x	competer,	x	features,	x
creative,	x	dicey,	x	forward-looking,	x	freethinking,	x	competing,	x	founding,	x
creativity,	x	enterprising,	x	future,		independence,	x	competition,		high-value,	x
creator,	x	fearless,	x	ideas,		independent,		competition,	x	initiated,	x
development,		gamble,	x	inquire,	x	independent,	x	competitive,		initiatives,	x
discover,	x	gutsy,	x	inquiry,	x	independently,		competitive,	x	innovations,	x
discoverer,	x	headlong,	x	investigate,	x	individual,		competitor,		innovative,	x
discovery,	x	incautious,	x	investigation,	x	liberty,	x	competitor,	x	introductions,	x
dream,	x	intrepid,	x	look-into,	x	license,	x	competitors,		launch,	x

dream-up,	x	investing,		needs,		on-one’s-own,	x	competitory,	x	launched,	x
emphasis,		plunge,	x	opportunities,		outside,		conflicting,	x	leading,	x
envisage,	x	precarious,	x	opportunity-seeking,	x	prerogative,	x	contend,	x	opportunities,	x
envision,	x	rash,	x	perspective,		self-directed,		contender,	x	opportunity,	x
experimentation,		reckless,	x	proactive,		self-directed,	x	contentious,	x	originated,	x
expert,	x	risk,		proactive,	x	self-directing,	x	contest,	x	outdoing,	x
form,	x	risk,	x	proactively,		self-direction,	x	contestant,	x	outthinking,	x
formulation,	x	risks,		proactiveness,		self-rule,	x	cutthroat,	x	patents,	x
frame,	x	risk-taking,		probe,	x	self-ruling,	x	defend,	x	proprietary,	x
framer,	x	risky,		propensity,		separate,	x	dog-eat-dog,	x	prospects,	x
freethinker,	x	risky,	x	prospect,	x	sovereign,	x	enemy,	x	prototyping,	x
genesis,	x	stake,	x	reactiveness,		sovereignty,	x	engage,	x	pursuing,	x
genius,	x	temerity,	x	research,	x	unaffiliated,	x	entrant,	x	risks,	x
gifted,	x	uncertain,	x	respond,		unattached,	x	exploit,	x	unique,	x
hit-upon,	x	uncertainty,		responsive,		unconfined,	x	fierce,	x	ventures,	x
imagination,	x	venture,	x	scrutinization,	x	unconnected,	x	fight,	x		
imaginative,	x	venturesome,	x	scrutiny,	x	unfettered,	x	fighter,	x		
imagine,	x	wager,	x	search,	x	unforced,	x	foe,	x		
improvise,	x			study,	x	ungoverned,	x	intense,	x		
ingenious,	x			survey,	x	unregulated,	x	intensified,	x		
ingenuity,	x							intensive,	x		
initiative,	x							jockey-for-position,	x		
initiator,	x							joust,	x		
innovate,	x							jouster,	x		
innovation,								lock-horns,	x		
innovation,	x							opponent,	x		
innovation,	x							oppose,	x		
innovations,								opposed,			
innovative,								opposing,	x		
innovativeness,								opposition,	x		

inspiration,	x
inspired,	x
invent,	x
invented,	x
invention,	x
inventive,	x
inventiveness,	x
inventor,	x
learning,	
make-up,	x
mastermind,	x
master-stroke,	x
metamorphose,	x
metamorphosis,	x
neoteric,	x
neoterism,	x
neoterize,	x
new,	
new,	x
new-wrinkle,	x
novel,	x
novelty,	x
original,	x
originality,	x
originate,	x
origination,	x
originative,	x
originator,	x
patent,	x
product-market,	

outperform,	
play-against,	x
ready-to-fight,	x
rival,	x
rivals,	
spar,	x
strive,	x
striving,	x
struggle,	x
tactics,	
tussle,	x
undermine,	
vying,	x
weaknesses,	
wrestle,	x

radical,	x
recast,	x
recasting,	x
resourceful,	x
resourcefulness,	x
restyle,	x
restyling,	x
revolutionize,	x
seethings,	x
solutions,	
technological,	
technologies,	
think-up,	x
trademark,	x
vision,	x
visionary,	x
visualize,	x
willingness,	

As the second step (deductive content validity), to verify the content validity of the merged list, three subject matter experts (SMEs, i.e., persons having a certain degree of academic or business expertise to understand EO) were asked to review the words from the merged list, and to categorise them based on their expertise and knowledge of EO and its dimensions. By merging Short et al.'s (2009) list and the frequent word analysis of the previous research, 293 words remained to be categorised when excluding repetitions. The subject matter experts were provided with a Microsoft Excel list of all words presented in alphabetical order but not categorised by dimension. Moreover, they received instructions that included brief definitions of the five multi-dimensions and were given the task of mapping each word on the list to the dimension of either innovativeness, risk-taking, proactiveness, autonomy, competitive aggressiveness, or "unclear" (for example if the word could not be related to any dimension). See Appendix 4 for more details on the instructions provided to the SMEs.

To find an agreement index between the individual categorisations of the respondents, the following criteria were applied:

(A) A word was added to the absolute final list when at least two of the three respondents classified it within the same category while the other respondent remained unsure (indicated by the response of 'unclear' when judging an item's categorisation);

(B) or at least one respondent classified the word within the correct category while (i) the other two reviewers were unclear, and (ii) the word was consistent with the construct definitions used in this study and (iii) the explanations provided by Short et al. (2009);

(C) or where at least two reviewers agreed on a word's categorisation, but another suggested a different category. Here, the researcher, along with the additional members of the research team (the supervisors), scrutinised each word in comparison to the long-standing definitions in literature (e.g., Covin & Slevin, 1989; Hughes & Morgan, 2007; Lumpkin & Dess, 1996; Miller, 1983) to determine whether the term is appropriate for use. The decision was made by checking for its consistency with the definitions.

(D) All other words considered as having a disagreement among the three respondents (i.e., indicated by categorisations that are inconsistent with each other as well as inconsistent with Short et al.'s (2009) original categorisation) were, therefore, not included into the absolute final list.

Based on these guidelines, the following agreement rates were reported. Appendix 5 displays the complete word lists for further CATA analysis generated by this process (including the respondents' feedback).

X1 Autonomy: Agreement rate of 34 out of 40 words (85%)

X2 Competitive Aggressiveness: Agreement rate of 66 out of 67 words (98.51%)

X3 Innovativeness: Agreement rate of 90 out of 100 words (90%)

X4 Proactiveness: Agreement rate of 33 out of 44 words (75%)

X5 Risk-Taking: Agreement rate of 38 out of 42 words (90.48%)

The agreement rate of innovativeness, risk-taking, autonomy, and competitive aggressiveness was high, hence demonstrating acceptable consistency between the three raters, whereas a relatively lower (yet still satisfactory) percentage of agreement with the proactiveness terms was reported. This observation is mainly caused by the reviewers mapping words associated with proactiveness as "exploration", "research", and "ideas" to other dimensions such as risk-taking or innovativeness which may appear reasonable referring to knowledge, judgement, and understandings of the terms and the EO dimensions. However, a correct classification is crucial. Following earlier discussions, scholars within the EO literature have also equated the dimension of proactiveness with others such as competitive aggressiveness. This perspective has not remained unnoticed by Lumpkin and Dess (2001) whose findings suggest that both dimensions, in fact, approach two different directions in corporate decision making and, therefore, may have varying effects on business performance. Hence, going forward with the aforementioned criteria secured an optimal categorisation of words related to the five multi-dimensions.

Furthermore, note that – since this thesis studies the North American market – American orthography of the words is employed.

4.5.2. External Validity

Referring to external validity, Short et al. (2009) have suggested the use of LTS as a firm's narrative to measure its EO based on three reasons. Firstly, LTS constitute a significant source of insight on the top-level managers' plans for firm re-structuring, their general beliefs (D'Aveni & MacMillan, 1990), or on any other firm-specific topics (Barr, Stimpert, & Huff, 1992). Moreover, they also provide an insight on missions, visions, and ideologies that include the firm's intended EO as well. Secondly, LTS are read as part of the annual report (Courtis, 1982), which allows CEOs to communicate risks and issues (Goodman, 1980) to the shareholders whereas there is empirical evidence of CEOs actively contributing to the writing process (Amernic, Craig, & Tourish, 2007). Lastly, LTS are classified as a form of rhetoric writing and are explicitly associated to the firm's internal activities and business outcomes (Bowman, 1984; Michalisin, 2001, Short et al., 2009). These advantages provide a boost to the CATA analysis and LTS over all other data collection methods to research firm-level EO. In addition to LTS, the consideration of the more standardised 10-K filings does not only support external validity to compare results of both sample sources but, moreover, – as a relatively new method in the field for measuring firm EO – provides unique insights into the five dimensions' relationship onto the performance. Ultimately, both file sources of LTS and 10-K are analysed simultaneously (as they have varying target audiences) to document at a detailed level where the results compare well and where differences can be reported. The comparisons of the results of the 10-K and LTS file sources are not part of the hypotheses testing, however, are a vital factor for providing a new level into firm-level EO research as it is described in executive narratives. Thus, these comparisons set an initial stage of an exploratory investigation on the issue of considering different file sources within firm-level EO research.

4.5.3. Data Reliability

Assessing EO via CATA minimises the possible errors from human coders such as rater exhaustion or insufficient training (Short et al., 2009; also refer to McKenny et al., 2016). Like human coding schemes, CATA tests content by word usage as well (Morris, 1994). Studying cognitions within LTS and 10-K filings allows for the review of authors' perceptions by checking a concept's respective word presence, absence, and frequency (Carley, 1997, Short et al., 2009); hence, it allows for the study of texts in a concise time with almost seamless content reliability and without code bias (Short et al., 2009; Stevenson, 2001).

Following the steps to enhance construct validity as derived from Short et al. (2009), the assessment of the dimensionality for multidimensional constructs and predictive (nomological) validity will be a part of the results and analyses sections within this thesis (see section 5.1 ff.).

4.6. Ethical Considerations

For this research, no major ethical restrictions were of relevance due to the analysis of existing and already published secondary data in the form of financial data, annual reports, LTS, and 10-K filings. Freely accessible data on the internet, in books, or public forums implies the consent for supplementary usage and analyses if not indicated differently. The proprietorship must be recognised by the researcher (Silverman & Gubrium, 2006). Not freely accessable data requires explicit and written authorisation for further employment if one is not part of that dedicated research team (Silverman & Gubrium, 2006). This section aims to briefly outline the advantages and potential challenges of a secondary data and content analysis.

Here employed, freely accessible sources of data, such as COMPUSTAT's financials or the LTS and 10-K filings, can easily be reused by: employing data in a cost and time efficient manner that otherwise would be expensive to collect, exploring data from different perspectives further, carrying out a similar research designs across various contexts (e.g. over regions, time, or cross-culturally), or by verifying the findings of an original study (Silverman & Gubrium, 2006). In contrast to this, a qualitative survey design (personal data respectively), for example, would be detrimental due to various aspects: comparable higher costs to collect the data, potential damage of a respondent due to broken confidentiality, fixed set of questions that are asked and cannot be re-assed ones the answers are submitted, responses may be affected by the motivation of a research or by improper recall of a respondent (Cowton, 1998; Silverman & Gubrium, 2006).

Besides its many advantages as compared to more conventual approaches, the usage of this study's secondary data analysis may come with some ethical trade-offs in terms of the employed data that require acknowledgement. First, firms and their top managers have prepared the LTS and 10-K filings. Since especially LTS are written in favour of the shareholders, their authors may have knowingly impaired the content shared in these files. Therefore, throughout this thesis, for verification purposes both file sources are analysed, and their results are compared at all instances. Second, both data sources are not written with the intention of measuring EO which may provide base to argue to what extent these can be consulted for content-analysis. This is a known research limitation. Section 7.3.1. delivers a detailed overview of limitations of this study targeting especially computer-aided text analysis. Lastly, a researcher must require the specialised awareness and technical skillset to perform the appropriate analyses with the utilised data. The data should be investigated according to certain criteria in alignment with the methodological approach of the sample selection and classification, measurement implications, and data collection. Refer to the early sections of chapter 4 for more insights on how this was addressed along with this study.

CHAPTER 5: ANALYSIS AND RESULTS

The following chapter will present this study's results according to an initially performed computer-aided text analysis of firm EO in both defined sample sources of 10-K and LTS followed by distinct steps to investigate and test the individual research questions of one (H1 and H2), two (H3 to H7), three (H8 and H9), and four (H10). A variety of analytical tools will be illustrated and used.

5.1. Initial CATA Analysis to Quantify the EO Dimensions

Scholars employ computer-assisted content analysis techniques to examine large amounts of textual data (Duriau et al., 2007; Morris, 1994; Short et al., 2009) in reliable and easily reproducible manner. Organisational researchers using content analyses often perform them on firm published texts, for example, annual reports, LTS, mission statements (Duriau et al., 2007), and 10-K filings. These procedures can be used to classify samples to draw conclusions about their contexts (Krippendorff, 2004; Short et al., 2009; Weber, 1990). For example, previous applications of this approach have studied CEO performance comparisons (e.g., Short & Palmer, 2003) as well as different aspects of firm sense-making (e.g., Gioia & Chittipeddi, 1991). Most relevant to the current study is the content analysis performed in Short et al.'s (2009) study of the effects of EO on performance. The dictionary of EO-related terms created by Short provides a foundation for analysis conducted in the current study.

In this study's context, performing a computer-aided text analysis (CATA) by using dictionaries as partially developed by Short et al. (2009) allows for the assessment of large samples of textual material from multiple firms with low cost, high speed, and validity as well as reliability. The use of CATA to analyse texts containing words connected to EO dimensions has successfully been verified in earlier EO studies (e.g., Boling et al., 2015; Engelen et al., 2015). Yet, only limited studies have involved the research of all five multi-dimensions of EO. Moreover, none of these investigations has studied the linkage of all EO dimensions to business performance, considering that the relationships may be moderated by industry characteristics. The current thesis uses CATA to analyse data from LTS and 10-K filings to address the proposed research questions.

Primary software tools to capture the EO construct include VBPro, CATPAC, Concordance, DICTION, General Inquirer, LIWC, NVivo, and MECA. Short et al. (2009) recommended using DICTION as it has successfully been employed in previous research on assessing leadership (Bligh et al., 2004), thereby maintaining consistency across research. The software allows for the reading of a variety of text formats (such as .html, .docx, .pdf), provides .xlsx or .csv output formats, and supports custom user-created dictionaries. Hence, DICTION was selected for analyses within this thesis as well.

For each industry type (HT and LT) and text source (LTS and 10-K), individual projects were created in the DICTION software by uploading the .pdf files into input folders. The files were loaded into multiple folders per industry type and source to minimise the size of analysis per DICTION project. These included 125 LTS files for HT and 247 for LT firms as well as 147 10-K files for HT and 280 for LT firms. Some files were not progressed (error messages) as DICTION has a limitation on file size. This was the only error encountered while working with DICTION. To avoid such errors in those particular cases, the relevant .pdf files were converted into Microsoft Word format as these require less disk space. Random checks were performed to ensure that the conversions did not rephrase words or break them up. Moreover, the agreed dictionaries for the five multi-dimensions (see section 4.5) were uploaded into the Global User Dictionaries folder as .txt file.

To analyse the level of EO per dimension per firm, a ‘Standard Analysis’ (DICTION functionality) was performed within DICTION. DICTION analyses files in 500-word units and averages its results across units when there are multiple 500-word units within one document. Results are displayed as mean scores per dimension and firm. In the outcome, figures were presented that refer to the average word count from the deductively defined word lists. These results were exported as four Microsoft Excel tables corresponding to the possible combinations of technology level (HT, LT) and data source (10-K, LTS). These results were used in further analyses to address the corresponding research questions.

5.2. Examining RQ1: Ideal Profiles of the EO Dimensions of Firms in High-Tech versus Less-Tech Industries

To address research question 1, regarding whether an ideal EO profile can be identified and whether it differs bewteen high- and less-tech firms, the two samples of HT and LT firms were each ranked by firm performance, so that the top, middle, and lowest performers within each sample could be identified. Following this, ideal profiles of EO were defined for each of the two industry types by determining the profiles of the high-performing firms (defined as being in the top 5% or top 10% of samples taken). Next, the deviation from the ideal profile for each industry type was tested. This leads to the following results for H1 and H2.

5.2.1. H1: Configurations of EO Dimensions Associated with Best-performing Firms are not the same Across the Two Industry Types

The first goal was to identify the configurations of EO dimensions that were associated with the highest performers in the two industry types. To do this, it was necessary to identify the highest performers in both the higher and lower tech groups. This task was achieved within each dataset of HT (N = 147) and LT firms (N = 280), using information from the four performance variables of sales growth, market share, gross-profit-margin, and ROA. Throughout this thesis, two methods of ranking were tested by creating (i) a composite ranking score and (ii) a composite performance score that could then be used to order each firm with respect to the other firms in either the HT or LT sample. Ultimately, the composite performance score was selected (see the following paragraphs for further justification).

The initial choice of performance variables employed to establish the performance rankings was based on the research of Lumpkin and Dess (1996), who suggest that different dimensions of EO will have varying effects on each of the measures of performance. Thus, the performance indicators of sales growth (V1), market share (V2), and profitability (i.e., gross-profit-margin (V3) and ROA (V4)) were used (for a detailed justification refer to section 4.3.2). As EO is considered to have a long-term impact on performance (Lumpkin and Dess, 1996), its indicator values were obtained for the fiscal year 2012 and 2014 to investigate the influence of EO (2012 data) on performance within the following years.

The first option was to rank each firm separately on the four performance indicators (from "1" to "147" for HT firms and "1" to "280" for LT firms). This task would be followed by creating a composite ranking across all performance measures (please see Ranking Option (i) Composite Ranking Score within Appendix 6). Another ranking – and, ultimately, the option selected for further analyses – was the composite performance score (Option (ii)). Here, for each of the four performance indicators, the firms' z-scores were calculated through the SPSS software. Using the z-scores allowed the performance measures to be standardised by knowing on how many standard deviations a value is away from the mean, which supported the comparability for each of the different performance indicators. Refer to Table 12 for the z-score statistics.

Table 12: Data Analysis and Results: H1: LT & HT T5/10% and P5/10% Performers 2012 – z-score statistics

Descriptive Statistics					
Performance Indicators	N	Minimum	Maximum	Mean	Std. Deviation
SG 2012 in %	427	-.7489	5.1786	.0647	.2859
MS 2012 in %	427	.0000	.0158	.0006	.0015
GPM 2012 in %	427	.0334	.9842	.4355	.2271
ROA 2012 in %	427	-.2370	.3347	.0649	.0629

Next, the standardised values of the four performance measures for each firm were totalled and averaged to then rank-order the firms based on their composite score (i.e., composite performance score per firm = (z-score V1 + z-score V2 + z-score V3 + z-score V4) / 4).

The composite performance scores were then used to create a three-tier categorisation of firms into high (top 5% and 10%), medium (90% and 80%), and low (poorest 5% and 10%) performers. For example, this resulted in ranking Honeywell International Inc. as the best performer within the HT space with a composite performance score of 2.1, while Newfield Exploration Co. was ranked as the lowest performer (average of -1.4) within the same industry type.

We set ideal profiles for the top 5% as well as top 10% ranges due to two main reasons: Firstly, these ranges were successfully employed by scholars within this research area of ideal profiles before (such as Hughes et al., 2007) and, secondly, these allowed for the comparison and for the robustness check of whether the top 5% respectively top 10% showed similar patterns. Moreover, being part of the S&P 500, all firms were regarded as high performers – to a certain extent – already. Hence, limiting the ideal profile analyses to such exclusive lists of firms (top 5% and top 10%) allowed for investigating why and how specifically these are driving performance as compared to their middle and lower groups.

Some firm categorisations of the top and poor performers are identical to the previous option (i) (refer to Appendix 6) such as Apple Inc. being categorised as T5% firm within the HT industry type. In conclusion, the composite performance score was used for further analyses as the employed performance measures were standardised. This decision allowed for the capturing of the actual gap in distributions of values on the four performance indicators per industry sector. Furthermore, analyses can be referred back to the individual values to observe the quantifiable divide of differences between each. Table 13 displays all final categorised top and poor performers of the composite performance score including their average z-scores.

Table 13: Data Analysis and Results: H1: LT & HT T5/10% and P5/10% Performers 2012 – Composite Performance Score

Ticker Symbol	Company Name	Composite Performance Score (average z-scores)	Highest (T5%/T10% or Poorest (P5%/P10%) Performers	Ticker Symbol	Company Name	Composite Performance Score (average z-scores)	Highest (T5%/T10% or Poorest (P5%/P10%) Performers
Low-Tech Firms				**High-Tech Firms**			
LUK	LEUCADIA NATIONAL CORP	4.1984	T5% + T10%	HON	HONEYWELL INTERNATIONAL INC	2.0761	T5% + T10%
COH	COACH INC	3.9531	T5% + T10%	AAPL	APPLE INC	1.7869	T5% + T10%
NKE	NIKE INC	2.2397	T5% + T10%	STX	SEAGATE TECHNOLOGY PLC	1.2431	T5% + T10%
MNST	MONSTER BEVERAGE CORP	1.1797	T5% + T10%	IBM	INTL BUSINESS MACHINES CORP	1.1787	T5% + T10%
WMT	WAL-MART STORES INC	1.1056	T5% + T10%	CSCO	CISCO SYSTEMS INC	1.1333	T5% + T10%
PM	PHILIP MORRIS INTERNATIONAL	0.9404	T5% + T10%	PCLN	PRICELINE GROUP INC	1.0221	T5% + T10%
MCO	MOODY'S CORP	0.8205	T5% + T10%	TRIP	TRIPADVISOR INC	0.9643	T5% + T10%
FAST	FASTENAL CO	0.7601	T5% + T10%	ABBV	ABBVIE INC	0.9454	T10%
MA	MASTERCARD INC	0.7256	T5% + T10%	YHOO	YAHOO INC	0.9190	T10%
SNI	SCRIPPS NETWORKS INTERACTIVE	0.6864	T5% + T10%	ALXN	ALEXION PHARMACEUTICALS INC	0.8968	T10%
ECL	ECOLAB INC	0.6858	T5% + T10%	INTU	INTUIT INC	0.8100	T10%
MJN	MEAD JOHNSON NUTRITION CO	0.6393	T5% + T10%	HPQ	HP INC	0.8082	T10%
BF.B	BROWN FORMAN CORP	0.6242	T5% + T10%	VRSN	VERISIGN INC	0.8051	T10%
EW	EDWARDS LIFESCIENCES CORP	0.6131	T5% + T10%	ISRG	INTUITIVE SURGICAL INC	0.8007	T10%
TROW	PRICE (T. ROWE) GROUP	0.5769	T10%	BIIB	BIOGEN INC	0.7930	T10%
PEP	PEPSICO INC	0.5592	T10%	ATI	ALLEGHENY TECHNOLOGIES INC	-0.5148	P10%
DLTR	DOLLAR TREE INC	0.5499	T10%	VLO	VALERO ENERGY CORP	-0.5261	P10%
DISCA	DISCOVERY COMMUNICATIONS INC	0.4724	T10%	LLL	L-3 COMMUNICATIONS HLDGS INC	-0.5364	P10%
RL	RALPH LAUREN CORP	0.4521	T10%	PSX	PHILLIPS 66	-0.5417	P10%
DNB	DUN & BRADSTREET CORP	0.4515	T10%	DOW	DOW CHEMICAL	-0.5501	P10%
KO	COCA-COLA CO	0.4483	T10%	QEP	QEP RESOURCES INC	-0.5503	P10%
ROST	ROSS STORES INC	0.4227	T10%	IPG	INTERPUBLIC GROUP OF COS	-0.5996	P10%
ESV	ENSCO PLC	0.4162	T10%	DVN	DEVON ENERGY CORP	-0.6156	P10%
BBBY	BED BATH & BEYOND INC	0.4146	T10%	GD	GENERAL DYNAMICS CORP	-0.6872	P5% + P10%
VFC	VF CORP	0.4117	T10%	SWN	SOUTHWESTERN ENERGY CO	-0.7097	P5% + P10%
TJX	TJX COMPANIES INC	0.3932	T10%	CHK	CHESAPEAKE ENERGY CORP	-0.7472	P5% + P10%

BCR	BARD (C.R.) INC	0.3847	T10%	MU	MICRON TECHNOLOGY INC	-0.7742	P5% + P10%
AZO	AUTOZONE INC	0.3836	T10%	COP	CONOCOPHILLIPS	-0.7961	P5% + P10%
CAH	CARDINAL HEALTH INC	-0.5954	P10%	BSX	BOSTON SCIENTIFIC CORP	-1.0635	P5% + P10%
NI	NISOURCE INC	-0.5993	P10%	NFX	NEWFIELD EXPLORATION CO	-1.3549	P5% + P10%
EIX	EDISON INTERNATIONAL	-0.6013	P10%				
CNX	CONSOL ENERGY INC	-0.6151	P10%				
L	LOEWS CORP	-0.6182	P10%				
NUE	NUCOR CORP	-0.6200	P10%				
LNC	LINCOLN NATIONAL CORP	-0.6204	P10%				
XL	XL GROUP LTD	-0.6251	P10%				
HIG	HARTFORD FINANCIAL SERVICES	-0.6259	P10%				
MCK	MCKESSON CORP	-0.6412	P10%				
THC	TENET HEALTHCARE CORP	-0.6468	P10%				
UNM	UNUM GROUP	-0.6502	P10%				
ABC	AMERISOURCEBERGEN CORP	-0.6541	P10%				
ALL	ALLSTATE CORP	-0.6634	P10%				
AA	ALCOA INC	-0.6658	P5% + P10%				
AIZ	ASSURANT INC	-0.6749	P5% + P10%				
SEE	SEALED AIR CORP	-0.6818	P5% + P10%				
PFG	PRINCIPAL FINANCIAL GRP INC	-0.6850	P5% + P10%				
NRG	NRG ENERGY INC	-0.6924	P5% + P10%				
POM	PEPCO HOLDINGS INC	-0.6992	P5% + P10%				
BBY	BEST BUY CO INC	-0.7195	P5% + P10%				
MS	MORGAN STANLEY	-0.7526	P5% + P10%				
GNW	GENWORTH FINANCIAL INC	-0.7658	P5% + P10%				
MET	METLIFE INC	-0.7667	P5% + P10%				
OKE	ONEOK INC	-0.7766	P5% + P10%				
AEE	AMEREN CORP	-0.8040	P5% + P10%				
GME	GAMESTOP CORP	-0.8616	P5% + P10%				
LM	LEGG MASON INC	-0.9303	P5% + P10%				

To investigate H1, the following steps were performed, including a Correlation (A) and multiple ANOVA analyses (refer to (B) and (C)).

5.2.1.1. Analysis and Results (A) Targeting H1: Construct Means, Standard Deviations, and Correlations by Industry Type and Sample Source

To examine the construct validity of the multi-dimensional EO, Short et al. (2014) suggest calculating the correlations amongst the five EO dimensional scores that resulted from the DICTION analysis. This analysis would disclose if any statistically significant correlations between the EO dimensions can be reported (see Short et al., 2009). Edwards (2000) recommends that for constructs that are assumed to be multidimensional, each dimension should be observed distinctively but also associated to some extent with the other dimensions of the construct (see also Short et al., 2009). Correlations can range in value from -1 to 0 to +1; the stronger the correlation, the closer is the value to +1 or -1. Since EO was theorised as a multidimensional construct (Lumpkin and Dess, 1996), no strong correlations between the five dimensions were expected.

Results (A) Targeting H1: Construct Means, Standard Deviations, and Correlations by Industry Type and Sample Source

Table 14 displays the descriptive statistics, including the means, standard deviations, and correlations for all EO dimensions (Table 14 sub-tables A. to D.). These are separated by the two sample sources of LTS and 10-K and include sub-tables for each of the industry types of HT and LT. Table 15, moreover, combines HT and LT firms for LTS as well as 10-K data sources (Table 15 sub-tables A. and B.). Means presented within both tables were within reasonable and positive ranges (see also Hughes et al., 2007). The standard deviation provided an indication of the spreading of scores around the means; the smaller a standard deviation was, the narrower the range would be between the lowest and highest scores – as evidenced by the values of 2.995 as a standard deviation with a mean of 4.576 for innovativeness (Table 14 D. 10-K_LT N=280). This specific instance implies a large spread, which might be caused by the great diversity of firms studied in the context of innovativeness. Within the same sample source, competitive aggressiveness had a standard deviation of .348 and a mean of .172, which were relatively small.

Even though not all correlations were statistically significant, some were. In total, ten statistically significant correlations were reported for the non-combined sample sources (Table 14) and seven for the combined sample sources (Table 15). Such cases of statistically significant correlations included proactiveness with competitive aggressiveness within the HT group (Table 14 B. 10-K_HT N=147 with a correlation coefficient of .245 significant at the .01 level), risk-taking with proactiveness within the LT group (Table 14 D. 10-K_LT N=280 with a correlation coefficient of .224 significant at the .01 level), and others. Furthermore, Table 15 shows LTS and 10-K statistics for the combined HT and LT firms. Depicting the results for LTS, the significant correlations were: proactiveness with competitive aggressiveness (correlation coefficient of .137 significant at the .01 level), proactiveness with innovativeness (correlation coefficient of .155 significant at the .01 level), and risk-taking with proactiveness (correlation coefficient of .119 significant at the .05 level) (Table 15 A. LTS_HT & LTS_LT N=372). With regards to the 10-K filings, the significant correlations were: proactiveness with competitive aggressiveness (correlation coefficient of .318 significant at the .01 level), risk-taking with autonomy (correlation coefficient of .122 significant at the .05 level), risk-taking with competitive aggressiveness (correlation coefficient of .180 significant at the .01 level), and risk-taking with proactiveness (correlation coefficient of .278 significant at the .01 level) (Table 15 B. 10-K_HT & 10-K_LT N=427).

However, as expected, the majority of correlations were positive but not statistically significant, with a few correlation coefficients even being negative; similarly, for LTS and 10-K. These tended to be of relatively low magnitude, the strongest correlation was .44. Thus, as all (statistically significant) correlations were correlated to less than .5 with any other measurement, first evidence from these two file sources are consistent with Lumpkin and Dess' (1996), Hughes et al.'s (2007), and Short et al.'s (2009) findings on EO as being regarded as a multidimensional construct. This finding allowed for the further investigation of the hypothesis.

Table 14: Data Analysis and Results: H1: EO Dimension Construct Means, Standard Deviations, and Correlations by Industry Type of HT or LT and Sample Source of LTS and 10-K (Pearson Correlation)

A. LTS_HT N=125	Mean	Standard Deviation	Correlations among study variables				
			X1	X2	X3	X4	X5
X1 Autonomy	0.582	1.016	1.000				
X2 Competitive A.	0.707	0.905	0.011	1.000			
X3 Innovativeness	5.708	3.403	-0.139	**.185***	1.000		
X4 Proactiveness	3.215	2.061	-0.113	**.245****	0.004	1.000	
X5 Risk-Taking	0.450	0.744	-0.013	0.058	0.172	0.148	1.000

B. 10-K_HT N=147	Mean	Standard Deviation	Correlations among study variables				
			X1	X2	X3	X4	X5
X1 Autonomy	0.754	0.943	1.000				
X2 Competitive A.	0.191	0.376	-0.070	1.000			
X3 Innovativeness	5.390	3.372	0.003	-0.010	1.000		
X4 Proactiveness	0.818	1.741	-0.009	**.436****	0.048	1.000	
X5 Risk-Taking	0.441	0.990	0.059	**.324****	-0.037	**.329****	1.000

C. LTS_LT N=247	Mean	Standard Deviation	Correlations among study variables				
			X1	X2	X3	X4	X5
X1 Autonomy	0.504	0.902	1.000				
X2 Competitive A.	0.624	0.883	0.022	1.000			
X3 Innovativeness	4.166	2.903	0.113	0.007	1.000		
X4 Proactiveness	2.544	2.052	-0.008	0.074	**.196****	1.000	
X5 Risk-Taking	0.490	0.838	0.072	-0.007	-0.050	0.114	1.000

D. 10-K_LT N=280	Mean	Standard Deviation	Correlations among study variables X1	X2	X3	X4	X5
X1 Autonomy	0.846	1.252	1.000				
X2 Competitive Aggressiveness	0.172	0.348	-0.081	1.000			
X3 Innovativeness	4.576	2.995	0.035	-0.008	1.000		
X4 Proactiveness	0.511	1.157	-0.045	**.224****	0.007	1.000	
X5 Risk-Taking	0.378	0.773	**.162****	0.077	**-.126***	**.224****	1.000

***. Correlation is significant at the 0.01 level (2-tailed).*

**. Correlation is significant at the 0.05 level (2-tailed).*

Table 15: Data Analysis and Results: H1: EO Dimension Combined Construct Means, Standard Deviations, and Correlations by Sample Source of LTS and 10-K (Pearson Correlation Combined for HT and LT)

A. LTS_HT & LTS_LT N=372	Mean	Standard Deviation	Correlations among study variables X1	X2	X3	X4	X5
X1 Autonomy	0.531	0.941	1.000				
X2 Competitive A.	0.652	0.890	0.019	1.000			
X3 Innovativeness	4.684	3.161	0.021	0.082	1.000		
X4 Proactiveness	2.769	2.077	-0.040	**.137****	**.155****	1.000	
X5 Risk-Taking	0.476	0.807	0.042	0.013	0.020	**.119***	1.000

B. 10-K_HT & 10-K_LT N=427	Mean	Standard Deviation	Correlations among study variables X1	X2	X3	X4	X5
X1 Autonomy	0.815	1.154	1.000				
X2 Competitive A.	0.179	0.358	-0.078	1.000			
X3 Innovativeness	4.856	3.150	0.020	-0.006	1.000		
X4 Proactiveness	0.616	1.392	-0.033	**.318****	0.038	1.000	
X5 Risk-Taking	0.400	0.853	.122*	**.180****	-0.083	**.278****	1.000

***. Correlation is significant at the 0.01 level (2-tailed).*

**. Correlation is significant at the 0.05 level (2-tailed).*

5.2.1.2. Analysis and Results (B) Targeting H1: ANOVA LTS versus 10-K & further Correlations among Study Variables of LTS versus 10-K

Analysis of Variance (ANOVA) was used to investigate how EO was communicated across the two sample sources of LTS versus 10-K and to test for the generalisability of the results of LTS versus 10-K respectively how EO values differ between both sources. ANOVA as a collection of statistical models allows the researcher to analyse differences among group means including their associated procedures (Hughes et al., 2007). This assessment was performed for all firms within the two sample sources (LTS LT vs. 10-K LT and LTS HT vs. 10-K HT). Hence, to examine the mean differences between the samples (as for the following ANOVA analyses as well), a one-way analysis of variance was performed.

In a second step, for the comparison of both file sources, only those firms that were present within both of the LTS and 10-K sample sources were selected. To focus merely on the assessment of LTS versus 10-K, the two industry types of HT and LT were combined per sample source. A correlation analysis per EO dimension then addressed the question of whether firms tend to be rank ordered on the same EO level using the LTS and 10-K scores.

Results (B) Targeting H1: ANOVA LTS versus 10-K & further Correlations among Study Variables of LTS versus 10-K

As indicated previously (section 4.5.1), the dimension scores are based on the CATA analyses using the word lists for the five multi-dimensions of EO. The EO dimension scores for each firm are standardised by the number of words in the relevant LTS or 10-K document for that firm; refer to section 4.5.1 for the detailed process of standardisation.

Firstly, as seen within Table 16, for HT firms within LTS and 10-K files, the ANOVA's results revealed no significant differences in the mean values of autonomy, innovativeness, and risk-taking; however, competitive aggressiveness and proactiveness differed significantly ($p<.01$). For LT firms, it was reported that autonomy, competitive aggressiveness, and proactiveness differ significantly ($p<.05$). Secondly, as displayed within Table 17, the correlation analysis of the five EO dimensional variables within the LTS as compared to the 10-K data (as an aggregate of HT and LT firms) revealed only a single instance of significant correlation for the dimension of competitive aggressiveness ($p= .047$). The relevant values – the correlation of one EO dimension within one sample source with the same dimension of the other sample source – are underlined in Table 17 for the benefit of the reader.

These mixed results ascertained through the different analyses from the ANOVA and correlation approach imply different levels of EO communicated within both sample sources of LTS and 10-K; hence, there is a need for careful and individual treatment of both. This variance is expected to lead back to the different target audiences of the data sources. Ultimately, and as a consequence, both the file sources were used and considered for analysis throughout the following separately rather than focusing on a single one. This differentiation helped in the understanding of whether reported results were identified in single file sources only or in both; therefore, providing an indication of the generalisability of the reported results (refer also Short et al., 2009).

Table 16: Data Analysis and Results: H1: ANOVA comparing EO Dimension Means for LTS versus 10-K

A. ANOVA LTS_HT vs 10K_HT Group 1 N = 125 Group 2 N = 147					
	Sum of Squares	df	Mean Square	F	Sig.
X1 Autonomy	1.992	1.000	1.992	2.088	0.150
X2 Competitive Aggressiveness	18.015	1.000	18.015	39.792	0.000
X3 Innovativeness	6.803	1.000	6.803	0.593	0.442
X4 Proactiveness	388.016	1.000	388.016	108.074	0.000
X5 Risk-Taking	0.005	1.000	0.005	0.006	0.937

B. ANOVA LTS_LT vs 10K_LT Group 1 N = 247 Group 2 N = 280					
	Sum of Squares	df	Mean Square	F	Sig.
X1 Autonomy	15.332	1.000	15.332	12.628	0.000
X2 Competitive Aggressiveness	26.777	1.000	26.777	62.232	0.000
X3 Innovativeness	21.977	1.000	21.977	2.522	0.113
X4 Proactiveness	542.781	1.000	542.781	202.178	0.000
X5 Risk-Taking	1.654	1.000	1.654	2.558	0.110

Note: Significance values indicated as having a level of '.000' are not to be regarded as zero values because technically they are '<.0005' (the same applies to all identically displayed significance values of '.000' throughout this thesis)

Table 17: Data Analysis and Results: H1: Correlation among Study Variables (LTS versus 10-K)

N = 372		**LTS X1 Autonomy**	**LTS X2 Competitive A.**	**LTS X3 Innovativ.**	**LTS X4 Proactiveness**	**LTS X5 Risk-Taking**	**10-K X1 Autonomy**	**10-K X2 Competitive A.**	**10-K X3 Innovativ.**	**10-K X4 Proactiveness**	**10-K X5 Risk-Taking**
LTS X1 Autonomy	Pearson Correlation	1.000									
	Sig. (2-tailed)										
LTS X2 Competitive Aggressiveness	Pearson Correlation	0.019	1.000								
	Sig. (2-tailed)	0.708									
LTS X3 Innovativeness	Pearson Correlation	0.021	0.082	1.000							
	Sig. (2-tailed)	0.691	0.115								
LTS X4 Proactiveness	Pearson Correlation	-0.040	.137**	.155**	1.000						
	Sig. (2-tailed)	0.445	0.008	0.003							
LTS X5 Risk-Taking	Pearson Correlation	0.042	0.013	0.020	.119*	1.000					
	Sig. (2-tailed)	0.416	0.808	0.698	0.021						
10-K X1 Autonomy	Pearson Correlation	**0.047**	0.026	-0.018	-0.068	-0.009	1.000				
	Sig. (2-tailed)	**0.366**	0.619	0.734	0.194	0.870					
10-K X2 Competitive Aggressiveness	Pearson Correlation	0.009	**.103***	0.036	-0.006	0.008	-0.065	1.000			
	Sig. (2-tailed)	0.857	**0.047**	0.490	0.912	0.871	0.210				
10-K X3 Innovativeness	Pearson Correlation	-0.044	-0.041	**0.081**	-0.041	-0.090	0.008	0.018	1.000		
	Sig. (2-tailed)	0.397	0.433	**0.119**	0.433	0.084	0.885	0.727			
10-K X4 Proactiveness	Pearson Correlation	-0.022	0.032	0.041	**0.032**	0.017	-0.031	.357**	0.024	1.000	
	Sig. (2-tailed)	0.674	0.532	0.426	**0.534**	0.742	0.546	0.000	0.638		
10-K X5 Risk-Taking	Pearson Correlation	0.041	0.034	0.089	0.023	**0.065**	0.092	.195**	-0.078	.292**	1.000
	Sig. (2-tailed)	0.425	0.518	0.088	0.661	**0.214**	0.078	0.000	0.132	0.000	

***. Correlation is significant at the 0.01 level (2-tailed).*

**. Correlation is significant at the 0.05 level (2-tailed).*

5.2.1.3. Analysis and Results (C) Targeting H1: ANOVA 10% HT versus 10% LT

A one-way ANOVA was performed to evaluate the mean differences in the EO dimensions between the top 10% performers of HT versus LT firms. This test was accomplished for LTS as well as 10-K files separately to test whether the configuration of EO dimensions associated with optimal performance is not the same across the industry types (H1) and to examine whether similar results are found when the dimensions are measured using the LTS and the 10-K data. Here, only the top 10% were evaluated as a higher number of firms within the sample may capture more variance of EO.

<u>Results (C) Targeting H1: ANOVA 10% HT versus 10% LT</u>

As reported in Table 18, when comparing the top 10% of HT performers to the top 10% of LT performers based on the LTS data, the results revealed no significant differences in the mean values for any of the five EO dimensions of autonomy, competitive aggressiveness, innovativeness, proactiveness, and risk-taking. The same results were found when the 10-K data were used ($p>.05$). Thus, regarding H1, which predicted that the configuration of EO dimensions associated with optimal performance differs across the industry types of high-tech and less-tech is questioned. Ultimately, these findings support the understanding of the wider importance of EO to firm performance as originally conceptualised by Lumpkin and Dess (1996); furthermore, the results suggest that EO is essential to excellent performers regardless of whether they are within the HT or LT intensive space, indicating that the value of EO is – at this stage of analysis – not sensitive to the industry types and that configuration matters for both groups. In conclusion, it can be noted that H1 is refuted.

Table 18: Data Analysis and Results: H1: ANOVA Comparing EO Dimension Means of HT versus LT T10%

ANOVA LTS_HT vs LTS_LT T10% Group 1 N = 11 Group 2 N = 25					
	Sum of Squares	df	Mean Square	F	Sig.
X1 Autonomy	0.269	1.000	0.269	1.155	0.290
X2 Competitive Aggressiveness	0.328	1.000	0.328	0.458	0.503
X3 Innovativeness	13.558	1.000	13.558	1.496	0.230
X4 Proactiveness	9.374	1.000	9.374	2.383	0.132
X5 Risk-Taking	0.285	1.000	0.285	1.469	0.234

ANOVA 10K_HT vs 10K_LT T10% Group 1 N = 15 Group 2 N = 28					
	Sum of Squares	df	Mean Square	F	Sig.
X1 Autonomy	0.109	1.000	0.109	0.190	0.666
X2 Competitive Aggressiveness	0.078	1.000	0.078	0.395	0.533
X3 Innovativeness	8.425	1.000	8.425	0.796	0.377
X4 Proactiveness	0.994	1.000	0.994	1.629	0.209
X5 Risk-Taking	1.148	1.000	1.148	2.880	0.097

5.2.2. H2: Deviation from an Ideal Profile of EO Dimensions is Negatively Related to Firm Performance

Ideal profiles and the deviation scores of poor performers were defined to reflect the degree to which the EO profiles per industry type and file source were similar or different to their ideal profiles. Here, a profile deviation score refers to the misfit of a performance group to the benchmark profile. Note that a higher value of deviation reflects a greater misfit (see also Hughes et al., 2007). In order to distinguish whether an EO dimension causes higher performance, it was investigated whether deviation from this ideal – as compared to poorer performers – resulted in significant variance. To investigate H2, the following steps of analysis were performed (including their results): Standard Deviation and t Test (A), Ideal Profile Configuration (B), and Regression Models (C).

5.2.2.1. Analysis and Results (A) Targeting H2: Construct Means, Standard Deviation, and t Test by Performance and Sample Source

To evaluate the actual existence of EO in HT and LT industries as well as to ensure the ability to test H2 related to ideal profiles, the LTS as well as 10-K sample sources were isolated and examined according to the top 5%, medium 90%, and poorest 5% performers (and respectively the top 10%, medium 80%, and poorest 10% performers). Mean scores and standard deviations were calculated per file source, industry type, and dimension as the basis to form the ideal profiles at a later point. To test whether firms utilised language consistent with EO, t tests were performed as an analysis of population means through statistical examination.

<u>Results (A) Targeting H2: Construct Means, Standard Deviation, and t Test by Performance and Sample Source</u>

As seen in Table 19, means, standard deviation, and t statistics are displayed by file source, industry type, dimension, and composite performance score level. One-sample t tests were conducted comparing to a test statistic of zero. Zero is the value that would be observed if a company had no evidence of language consistent with a given EO dimension (see also Short et al., 2009). Comparisons were made breaking out the two different file sources (i.e., LTS, 10-K), industry types, dimensions, and performance levels. Performing a t test at this detailed level of the top, medium, and poor performers is essential to ensure whether language to communicate EO is found at all analysed levels. As expected, due to a higher N within the 10% as compared to the 5% group, more items representing EO dimensions within the T10% group were reported. Here, the top 10% group provided greater insights than the top 5% perspective and was, therefore, used for further analysis.

Results revealed that evidence for language consistent with the EO dimensions was found across all analyses. Hence, for all t tests, the results displayed that the use of EO was detected for the files sources of LTS as well as 10-K for both industry types of HT and LT for all dimensions at every performance level. Due to different target audiences, means may vary between sample sources as seen in .502 for autonomy in the LTS (A. LTS_HT T10%) as compared to .720 within the 10-K data (C. 10-K_HT T10%) or with an even more considerable difference as evidenced by 3.175 for proactiveness in the LTS (A. LTS_HT T10%) as compared to .609 within the 10-K data (C. 10-K_HT T10%). Ultimately, it was reported that all EO dimensions were existent within the defined subsets (value for t existent as compared to zero) and provided the basis for further analysis of H2 and confidence in the existence of EO for other hypotheses testing as well.

Table 19: Data Analysis and Results: H2: Construct Means, Standard Deviation, and t Test for Evidence of Language Representing EO Dimensions in LTS/10-K by Performance

A. LTS_HT T5% to P5%	**LTS_HT T5% (N=5)**			**LTS_HT 90% (N=113)**			**LTS_HT P5% (N=7)**		
	Means	Standard Deviation	t Test	Means	Standard Deviation	t Test	Means	Standard Deviation	t Test
X1 Autonomy	0.706	0.749	2.108	0.553	1.020	5.766	0.963	1.148	2.220
X2 Competitive Aggressiveness	0.798	0.548	3.258	0.705	0.911	8.223	0.681	1.104	1.633
X3 Innovativeness	4.302	3.009	3.197	5.781	3.345	18.370	5.523	4.750	3.076
X4 Proactiveness	3.078	2.654	2.593	3.148	1.973	16.964	4.379	2.963	3.910
X5 Risk-Taking	0.112	0.128	1.951	0.471	0.763	6.569	0.344	0.663	1.374

B. LTS_LT T5% to P5%	**LTS_LT T5% (N=12)**			**LTS_LT 90% (N=223)**			**LTS_LT P5% (N=12)**		
	Means	Standard Deviation	t Test	Means	Standard Deviation	t Test	Means	Standard Deviation	t Test
X1 Autonomy	0.336	0.278	4.179	0.518	0.939	8.245	0.415	0.550	2.615
X2 Competitive Aggressiveness	1.134	1.039	3.782	0.607	0.884	10.259	0.427	0.520	2.844
X3 Innovativeness	4.903	3.503	4.849	4.174	2.882	21.632	3.278	2.671	4.251
X4 Proactiveness	1.898	1.252	5.249	2.600	2.084	18.636	2.153	2.070	3.601
X5 Risk-Taking	0.466	0.586	2.756	0.488	0.867	8.397	0.555	0.437	4.402

C. 10-K_HT T5% to P5%	**10-K_HT T5% (N=7)**			**10-K_HT 90% (N=133)**			**10-K_HT P5% (N=7)**		
	Means	Standard Deviation	t Test	Means	Standard Deviation	t Test	Means	Standard Deviation	t Test
X1 Autonomy	0.646	0.913	1.871	0.766	0.951	9.294	0.636	0.931	1.806
X2 Competitive Aggressiveness	0.297	0.284	2.767	0.190	0.389	5.639	0.101	0.129	2.084
X3 Innovativeness	3.741	2.162	4.579	5.446	3.349	18.757	5.974	4.661	3.391
X4 Proactiveness	0.469	1.095	1.132	0.859	1.807	5.484	0.386	0.593	1.720
X5 Risk-Taking	0.264	0.677	1.032	0.457	1.027	5.126	0.330	0.348	2.510

D. 10-K_LT T5% to P5%	10-K_LT T5% (N=14)			10-K_LT 90% (N=252)			10-K_LT P5% (N=14)		
	Means	Standard Deviation	t Test	Means	Standard Deviation	t Test	Means	Standard Deviation	t Test
X1 Autonomy	0.579	0.588	3.683	0.871	1.276	10.836	0.664	1.306	1.901
X2 Competitive Aggressiveness	0.383	0.591	2.422	0.166	0.335	7.858	0.078	0.161	1.811
X3 Innovativeness	5.498	4.103	5.014	4.430	2.824	24.902	6.269	4.153	5.648
X4 Proactiveness	0.278	0.487	2.135	0.527	1.199	6.980	0.442	0.823	2.011
X5 Risk-Taking	0.066	0.145	1.713	0.379	0.742	8.101	0.669	1.405	1.782

A. LTS_HT T10% to P10%	LTS_HT T10% (N=11)			LTS_HT 80% (N=100)			LTS_HT P10% (N=14)		
	Means	Standard Deviation	t Test	Means	Standard Deviation	t Test	Means	Standard Deviation	t Test
X1 Autonomy	0.502	0.709	2.348	0.585	1.063	5.496	0.631	0.913	2.588
X2 Competitive Aggressiveness	0.593	0.518	3.796	0.729	0.952	7.664	0.640	0.830	2.884
X3 Innovativeness	5.642	3.211	5.828	5.799	3.373	17.189	5.109	3.924	4.871
X4 Proactiveness	3.175	2.270	4.639	3.142	2.011	15.621	3.768	2.323	6.070
X5 Risk-Taking	0.207	0.324	2.120	0.492	0.798	6.170	0.338	0.520	2.432

B. LTS_LT T10% to P10%	LTS_LT T10% (N=25)			LTS_LT 80% (N=198)			LTS_LT P10% (N=25)		
	Means	Standard Deviation	t Test	Means	Standard Deviation	t Test	Means	Standard Deviation	t Test
X1 Autonomy	0.314	0.348	4.509	0.525	0.975	7.576	0.533	0.627	4.161
X2 Competitive Aggressiveness	0.800	0.950	4.211	0.620	0.911	9.585	0.473	0.498	4.655
X3 Innovativeness	4.310	2.923	7.371	4.207	2.933	20.188	3.678	2.696	6.684
X4 Proactiveness	2.067	1.851	5.584	2.594	2.067	17.661	2.634	2.145	6.014
X5 Risk-Taking	0.400	0.481	4.166	0.500	0.907	7.753	0.502	0.470	5.230

C. 10-K_HT T10% to P10%	10-K_HT T10% (N=15)			10-K_HT 80% (N=117)			10-K_HT P10% (N=15)		
	Means	Standard Deviation	t Test	Means	Standard Deviation	t Test	Means	Standard Deviation	t Test
X1 Autonomy	0.720	0.818	3.408	0.789	0.982	8.694	0.518	0.736	2.726
X2 Competitive Aggressiveness	0.323	0.438	2.862	0.185	0.386	5.183	0.105	0.152	2.682
X3 Innovativeness	4.282	2.062	8.041	5.585	3.430	17.615	4.979	3.882	4.967
X4 Proactiveness	0.609	1.125	2.095	0.904	1.894	5.164	0.355	0.530	2.596
X5 Risk-Taking	0.501	0.989	1.960	0.467	1.047	4.824	0.183	0.284	2.499

D. 10-K_LT T10% to P10%	10-K_LT T10% (N=28)			10-K_LT 80% (N=224)			10-K_LT P10% (N=28)		
	Means	Standard Deviation	t Test	Means	Standard Deviation	t Test	Means	Standard Deviation	t Test
X1 Autonomy	0.614	0.726	4.478	0.909	1.325	10.267	0.574	0.997	3.049
X2 Competitive Aggressiveness	0.234	0.448	2.764	0.174	0.350	7.429	0.103	0.189	2.870
X3 Innovativeness	5.211	3.723	7.405	4.477	2.837	23.616	4.730	3.436	7.284
X4 Proactiveness	0.290	0.520	2.950	0.555	1.255	6.619	0.374	0.684	2.894
X5 Risk-Taking	0.158	0.313	2.672	0.380	0.754	7.544	0.577	1.134	2.691

5.2.2.2. Analysis and Results (B) Targeting H2: (Ideal) Profile Configuration Scores in LTS/10-K by Performance

To test whether deviation from an ideal profile (configuration) of EO dimensions is negatively related to firm performance (H2), the distance of the ideal profiles (top 5% respectively top 10%) to the remaining groups of medium (90% respectively 80%) and poor performers (5% respectively 10%) was calculated by subtracting the mean values of the ideals from the ones of the remaining groups (see also Hughes et al., 2007). This step was carried out for both file sources of LTS and 10-K per industry type.

<u>Results (B) Targeting H2: (Ideal) Profile Configuration Scores in LTS/10-K by Performance</u>

Table 20 displays the mean, standard deviation, and ideal profile scores of the HT and LT firms by the performance levels of top 5% and 10% as well as the resulting profile deviation scores from the ideal of the medium and poor performers. For example, the EO dimensions constructing the ideal profiles of HT firms range from .207 to 5.642 within LTS (A. LTS_HT T10%) and .323 to 4.282 within 10-K files (C. 10-K_HT T10%), of LT firms from .314 to 4.310 (B. LTS_LT T10%) and .158 to 5.211 (D. 10-K_LT T10%). Moreover, this implies that all five dimensions are to be considered independently since all ideal profiles vary significantly per dimension. This is seen through an overall high level of innovativeness versus a low level of risk-taking at all levels of analysis (see also Hughes et al., 2007; Hughes & Morgan, 2007; Lumpkin & Dess, 1996). For example, within the top performers, it was reported that a few strong values are matched with weak values; such as within the top 10% of HT performers in the 10-K files (C. 10-K_HT T10% to P10%) a high level of innovativeness but low level of risk-taking matched similar results in the LTS group (A. LTS_HT T10% to P10%). This observation may indicate a firm's need for aligning strong, innovative activities with reasonable decisions while mitigating negative risk outcomes (see also Hughes et al., 2007; Hughes & Morgan, 2007). Furthermore, even though previous analyses provided evidence of a particular significant difference of 10-K and LTS at the dimensional level, here similar patterns of EO level constructions were observed when looking at the 10-K and LTS sources.

Especially comparing the deviation scores of the top to the poorest performers provided the first indication that deviation from an ideal profile of EO dimensions appears to be negatively related to firm performance, providing support for H2. For example, for competitive aggressiveness and innovativeness, results revealed that mean scores deviated negatively when comparing the top 10% to the poorest 10% of LT performers (B. LTS_LT T10% to P10% & D. 10-K_LT T10% to P10%). Hence, a higher level of competitive aggressiveness and innovativeness resulted in higher performance. Within the same groups, more risk-taking, on the other hand, equalled to lower performance.

Ultimately, almost all deviation scores ranged strongly into the positive (as seen in risk-taking for B. LTS_HT P5% & D. 10-K_HT P5% or proactiveness for A. LTS_HT P10% & C. 10-K_HT P10%) or negative direction (as evidenced by competitive aggressiveness for A. LTS_HT P5% & C. 10-K_HT P5% or innovativeness for B. LTS_LT P10% & D. 10-K_LT P10%). Only single instances with statistical significance, as evidenced by autonomy within the 10-K data of HT firms (10-K_HT P5%), suggested different as with -.01, (almost) no deviation between the top and poor performers was reported. Finally, totalling all deviation scores (of all file sources of the bottom 5% and 10% of firms within HT and LT) results in an average of .104, which is another indication of deviation from an ideal profile being related to impacting firm performance negatively.

Table 20: Data Analysis and Results: H2: Profile Deviation Scores in LTS/10-K by Performance

A. LTS_HT T5% to P5%	**LTS_HT T5% (N=5)**		**LTS_HT 90% (N=113)**			**LTS_HT P5% (N=7)**		
	Means	Standard Deviation	Means	Standard Deviation	Deviation Score	Means	Standard Deviation	Deviation Score
X1 Autonomy	0.706	0.749	0.553	1.020	-0.153	0.963	1.148	0.257
X2 Competitive Aggressiveness	0.798	0.548	0.705	0.911	-0.093	0.681	1.104	-0.117
X3 Innovativeness	4.302	3.009	5.781	3.345	1.479	5.523	4.750	1.221
X4 Proactiveness	3.078	2.654	3.148	1.973	0.070	4.379	2.963	1.301
X5 Risk-Taking	0.112	0.128	0.471	0.763	0.359	0.344	0.663	0.232

B. LTS_LT T5% to P5%	**LTS_LT T5% (N=12)**		**LTS_LT 90% (N=223)**			**LTS_LT P5% (N=12)**		
	Means	Standard Deviation	Means	Standard Deviation	Deviation Score	Means	Standard Deviation	Deviation Score
X1 Autonomy	0.336	0.278	0.518	0.939	0.182	0.415	0.550	0.079
X2 Competitive Aggressiveness	1.134	1.039	0.607	0.884	-0.527	0.427	0.520	-0.708
X3 Innovativeness	4.903	3.503	4.174	2.882	-0.728	3.278	2.671	-1.625
X4 Proactiveness	1.898	1.252	2.600	2.084	0.703	2.153	2.070	0.255
X5 Risk-Taking	0.466	0.586	0.488	0.867	0.022	0.555	0.437	0.089

C. 10-K_HT T5% to P5%	10-K_HT T5% (N=7)		10-K_HT 90% (N=133)			10-K_HT P5% (N=7)		
	Means	Standard Deviation	Means	Standard Deviation	Deviation Score	Means	Standard Deviation	Deviation Score
X1 Autonomy	0.646	0.913	0.766	0.951	0.120	0.636	0.931	-0.010
X2 Competitive Aggressiveness	0.297	0.284	0.190	0.389	-0.107	0.101	0.129	-0.196
X3 Innovativeness	3.741	2.162	5.446	3.349	1.705	5.974	4.661	2.233
X4 Proactiveness	0.469	1.095	0.859	1.807	0.391	0.386	0.593	-0.083
X5 Risk-Taking	0.264	0.677	0.457	1.027	0.192	0.330	0.348	0.066

D. 10-K_LT T5% to P5%	10-K_LT T5% (N=14)		10-K_LT 90% (N=252)			10-K_LT P5% (N=14)		
	Means	Standard Deviation	Means	Standard Deviation	Deviation Score	Means	Standard Deviation	Deviation Score
X1 Autonomy	0.579	0.588	0.871	1.276	0.293	0.664	1.306	0.085
X2 Competitive Aggressiveness	0.383	0.591	0.166	0.335	-0.217	0.078	0.161	-0.305
X3 Innovativeness	5.498	4.103	4.430	2.824	-1.068	6.269	4.153	0.771
X4 Proactiveness	0.278	0.487	0.527	1.199	0.249	0.442	0.823	0.164
X5 Risk-Taking	0.066	0.145	0.379	0.742	0.312	0.669	1.405	0.603

A. LTS_HT T10% to P10%	LTS_HT T10% (N=11)		LTS_HT 80% (N=100)			LTS_HT P10% (N=14)		
	Means	Standard Deviation	Means	Standard Deviation	Deviation Score	Means	Standard Deviation	Deviation Score
X1 Autonomy	0.502	0.709	0.585	1.063	0.083	0.631	0.913	0.130
X2 Competitive Aggressiveness	0.593	0.518	0.729	0.952	0.137	0.640	0.830	0.047
X3 Innovativeness	5.642	3.211	5.799	3.373	0.157	5.109	3.924	-0.533
X4 Proactiveness	3.175	2.270	3.142	2.011	-0.033	3.768	2.323	0.593
X5 Risk-Taking	0.207	0.324	0.492	0.798	0.285	0.338	0.520	0.131

B. LTS_LT T10% to P10%	LTS_LT T10% (N=25)		LTS_LT 80% (N=198)			LTS_LT P10% (N=25)		
	Means	Standard Deviation	Means	Standard Deviation	Deviation Score	Means	Standard Deviation	Deviation Score
X1 Autonomy	0.314	0.348	0.525	0.975	0.211	0.533	0.627	0.219
X2 Competitive Aggressiveness	0.800	0.950	0.620	0.911	-0.180	0.473	0.498	-0.327
X3 Innovativeness	4.310	2.923	4.207	2.933	-0.102	3.678	2.696	-0.632
X4 Proactiveness	2.067	1.851	2.594	2.067	0.527	2.634	2.145	0.567
X5 Risk-Taking	0.400	0.481	0.500	0.907	0.099	0.502	0.470	0.102

C. 10-K_HT T10% to P10%	10-K_HT T10% (N=15)		10-K_HT 80% (N=117)			10-K_HT P10% (N=15)		
	Means	Standard Deviation	Means	Standard Deviation	Deviation Score	Means	Standard Deviation	Deviation Score
X1 Autonomy	0.720	0.818	0.789	0.982	0.069	0.518	0.736	-0.202
X2 Competitive Aggressiveness	0.323	0.438	0.185	0.386	-0.138	0.105	0.152	-0.218
X3 Innovativeness	4.282	2.062	5.585	3.430	1.303	4.979	3.882	0.697
X4 Proactiveness	0.609	1.125	0.904	1.894	0.295	0.355	0.530	-0.253
X5 Risk-Taking	0.501	0.989	0.467	1.047	-0.034	0.183	0.284	-0.317

D. 10-K_LT T10% to P10%	10-K_LT T10% (N=28)		10-K_LT 80% (N=224)			10-K_LT P10% (N=28)		
	Means	Standard Deviation	Means	Standard Deviation	Deviation Score	Means	Standard Deviation	Deviation Score
X1 Autonomy	0.614	0.726	0.909	1.325	0.295	0.574	0.997	-0.040
X2 Competitive Aggressiveness	0.234	0.448	0.174	0.350	-0.060	0.103	0.189	-0.131
X3 Innovativeness	5.211	3.723	4.477	2.837	-0.734	4.730	3.436	-0.480
X4 Proactiveness	0.290	0.520	0.555	1.255	0.266	0.374	0.684	0.084
X5 Risk-Taking	0.158	0.313	0.380	0.754	0.222	0.577	1.134	0.419

5.2.2.3. Analysis and Results (C) Targeting H2: Regression Models for EO fit with Performance HT versus LT incl. T10% versus P10%

To strengthen the findings from the deviation scores (5.2.2.2), these were put into a regression model with performance as the dependent variable to examine whether the deviation from an ideal profile (configuration) of EO is negatively related to firm performance. To achieve this, as suggested by Hughes et al. (2007), deviation scores were squared, summed, and square rooted to study the misfit of EO. To test for the robustness of the results and to compare with earlier findings of this study, regression models containing the deviation from the ideal (here T10%) were compared to models comprising the deviation from the least ideal profiles (here P10%) (Hughes et al., 2007; Venkatraman, 1989).

<u>Results (C) Targeting H2: Regression Models for EO fit with Performance HT versus LT incl. T10% versus P10%</u>

As seen in Table 21, the outcome displays comparative regression models for the deviation of T10% and P10% firms for both HT/LT industries and the file sources of 10-K/LTS. Even though not essential for this particular hypothesis, industry types were kept separately, which may prove useful for another hypothesis. Furthermore, this includes the mean as derived from the deviation scores of the ideal profile (misfit), r, r square, f, and significance values. To perform the regression analyses, the following steps were taken.

(i) Previously, all firms within the two datasets of HT and LT were ranked by performance (composite performance score). This ranking was determined according to the performance indicators of sales growth, market share, gross-profit-margin, and return on assets defined by Lumkpin & Dess (1996). Resulting from this task, the averaged z-scores per firm for the composite performance rank were received. This approach was applied here as well by using the averaged z-scores for the following regression analyses as they best present the overall business performance of the population per item.

(ii) For all HT and LT firms within both file sources of LTS and 10-K, the profile deviation scores were calculated by subtracting the individual ideal profile score from the firm's EO level per dimension. T10% and P10% deviation scores were put into separate Microsoft Excel files to perform the following analyses within the SPSS software.

(iii) The first set of profile deviation scores of high performers (T10%) was entered into linear regression models in SPSS with the firm performance of 2012 being the dependent variable (see also Hughes et al., 2007). This step was accomplished for the following instances as seen in Table 21: A. LTS_HT T10% (N=11), B. 10-K_HT T10% (N=15), C. LTS_LT T10% (N=25), and D. 10-K_LT T10% (N=28). Results revealed that profile deviation scores for firms at each EO dimension were similarly regressed (mean from deviation score and r value).

(iv) In order to test for the negative impact of the ideal profile deviation on performance, regression models containing a deviation from the ideal of higher performing firms must be compared to models containing a deviation from non-ideal performers (see also Hughes et al., 2007; Vorhies & Morgan, 2003). Thus, the process of regressing ideal profiles was repeated with firms that were classified as poorer performers (P10%). These were developed by randomly selecting a number of firms for each industry type and file source equal to the number for each of the ideal profiles. This was accomplished for the following instances as seen in Table 21: A LTS_HT P10% (N=11), B. 10-K_HT P10% (N=15), C. LTS_LT P10% (N=25), D. 10-K_LT P10% (N=28). These non-ideal profile deviations (P10%) were entered into regression models in SPSS with the firm's composite performance scores as the dependent variable (see also Hughes et al., 2007). For A. LTS_HT P10% (N=14), the variable of the composite performance score (averaged z-score) was classified (by SPSS) as constant, hence, was deleted, and, therefore, statistics were not computed but excluded from the further regression analysis.

Ultimately, as displayed in Table 21, results support the hypothesis as to which deviation from an ideal profile (configuration) of EO dimensions is negatively related to firm performance (H2). In all instances, r, r square, and f value were higher for P10% than for T10% firms (except for the one case where no variables could be computed A. LTS_HT P10% (N=14)). For example, considering LTS in LT intensive firms, the T10% were at r = .250; r square = .062, and f value = .253 as compared to the P10% at r = .539; r square =.291, and f value = 1.476. Furthermore, comparing the misfit scores (mean from deviation score) per dimension of higher and poorer performers revealed that the misfit to the ideal was smaller (closer to zero) for the T10% than for P10% firms in almost all instances. Such as the misfit score of .0 for autonomy of HT firms as compared to -.202 (B. 10-K_HT T10% to P10%). Only one instance was reported where the misfit score was higher for T10% firms as compared to P10% firms, at autonomy (within C. LTS_LT T10% to P10%). Thus, it can be reasoned that a fit is, in fact, vital to accomplishing superior firm performance (see also Hughes et al., 2007) wherein higher deviation from the ideal leads to a lower fit, hence, lowered business performance as well. Here, support for the confirmation of H2 was found.

Table 21: Data Analysis and Results: H2: Regression Models for EO fit with Performance HT versus LT incl. T10% versus P10%

A. LTS_HT T10% to P10%	**LTS_HT T10% (N=11)**							**LTS_HT P10% (N=14; here N=11 randomly selected)**							
	Means	Standard Deviation	Mean (from Deviation Score)	R	R Square	F Value	Sig.	Means	Standard Deviation	Deviation Score	Mean (from Deviation Score)	R	R Square	F Value	Sig.
X1 Autonomy	0.502	0.709	0.000	0.531[a]	0.282	0.394	0.835[b]	0.631	0.913	0.130	0.268	x	x	x	x
X2 Competitive A.	0.593	0.518	0.000					0.640	0.830	0.047	0.095				
X3 Innovativ.	5.642	3.211	0.000					5.109	3.924	-0.533	-0.687				
X4 Proactiveness	3.175	2.270	0.000					3.768	2.323	0.593	0.433				
X5 Risk-Taking	0.207	0.324	0.000					0.338	0.520	0.131	0.060				

B. 10-K_HT T10% to P10%	**10-K_HT T10% (N=15)**							**10-K_HT P10% (N=15)**							
	Means	Standard Deviation	Mean (from Deviation Score)	R	R Square	F Value	Sig.	Means	Standard Deviation	Deviation Score	Mean (from Deviation Score)	R	R Square	F Value	Sig.
X1 Autonomy	0.720	0.818	0.000	0.479[a]	0.229	0.536	0.745[b]	0.518	0.736	-0.202	-0.202	0.600[a]	0.360	1.013	0.463[b]
X2 Competitive A.	0.323	0.438	0.000					0.105	0.152	-0.218	-0.218				
X3 Innovativ.	4.282	2.062	0.000					4.979	3.882	0.697	0.697				
X4 Proactiveness	0.609	1.125	0.000					0.355	0.530	-0.253	-0.253				
X5 Risk-Taking	0.501	0.989	0.000					0.183	0.284	-0.317	-0.317				

C. LTS_LT T10% to P10%	**LTS_LT T10% (N=25)**							**LTS_LT P10% (N=25)**							
	Means	Standard Deviation	Mean (from Deviation Score)	R	R Square	F Value	Sig.	Means	Standard Deviation	Deviation Score	Mean (from Deviation Score)	R	R Square	F Value	Sig.
X1 Autonomy	0.314	0.348	2.658	0.250[a]	0.062	0.253	0.933[b]	0.533	0.627	0.219	2.499	0.539[a]	0.291	1.476	0.246[b]
X2 Competitive A.	0.800	0.950	0.000					0.473	0.498	-0.327	-0.327				
X3 Innovativ.	4.310	2.923	0.000					3.678	2.696	-0.632	-0.632				
X4 Proactiveness	2.067	1.851	0.000					2.634	2.145	0.567	0.567				
X5 Risk-Taking	0.400	0.481	0.000					0.502	0.470	0.102	0.102				

D. 10-K_LT T10% to P10%	**10-K_LT T10% (N=28)**							**10-K_LT P10% (N=28)**							
	Means	Standard Deviation	Mean (from Deviation Score)	R	R Square	F Value	Sig.	Means	Standard Deviation	Deviation Score	Mean (from Deviation Score)	R	R Square	F Value	Sig.
X1 Autonomy	0.614	0.726	0.000	0.327[a]	0.150	0.775	0.578[b]	0.574	0.997	-0.040	-0.040	0.365[a]	0.164	0.878	0.645[b]
X2 Competitive A.	0.234	0.448	0.000					0.103	0.189	-0.131	-0.131				
X3 Innovativ.	5.211	3.723	0.000					4.730	3.436	-0.480	-0.480				
X4 Proactiveness	0.290	0.520	0.000					0.374	0.684	0.084	0.084				
X5 Risk-Taking	0.158	0.313	0.000					0.577	1.134	0.419	0.419				

a. Dependent Variable RQ1: composite performance score rank final list 2012 (top and poorest 10% performance indicators)

b. Predictors: (Constant), deviation ideal autonomy, comp. aggressiveness, innovativeness, proactiveness, risk-taking

5.2.3. H1-H2: Results Summary

Summarising the findings of H1 and H2 (research question 1), previous research as well as the current study have set empirical grounds for an existent EO-performance linkage driven by various types of environmental factors such as in numerous industries (Wiklund & Shepherd, 2005). Following configurational theory, the ideal combination of all five dimensions, as derived from the highest performing firms, is existent and portrays the ideal EO profile for firms to maximise performance. Hence, firm performance can be increased by an optimal alignment of the EO dimensions, but any deviation from that will risk creating a sub-optimal contribution to firm performance (H2). However, this optimal alignment is not significantly different between the industry types of HT versus LT (H1). This finding implies the need for a ‘perfect’ or ‘ideal’ fit of those dimensions to each other, deviance from which undermines firm performance in comparison to the ‘better configured’ rivals.

5.3. Examining RQ2: The Relationship of the Five Multi-Dimensions with Performance Moderated by Industry Types

In EO research, the majority of scholars have studied the causal relationship between unidimensional EO and business performance in which most assume a direct and positive linkage (Rauch et al., 2009; Martins & Rialp, 2013; Shirokova et al., 2016). Throughout the following, to challenge these assumptions – along with answering research question 2 – Lumpkin and Dess’ (1996) firm performance indicators allowed for studying the unique effects of each EO dimension on performance as well as considering whether these relationships vary across the two industry types of HT and LT (H3 to H7).

As presented in Figure 20 (for 2012) and Figure 21 (for 2014), the five EO multi-dimensions were proposed to influence the three performance indicators of sales growth, market share, and profitability individually (ROA and GPM). Thus, their effects were modelled and assessed distinctly as tests of H3 to H7 (for the individual dimensions). Industry type was considered as the vital moderator variable, and the model was tested separately using the two sample sources of LTS and 10-K data to test the generalisability of this thesis. As stated, in a different way from most other studies, here, EO dimensions were examined separately, and performance was not reflected as an overall firm measure but detached by its indicators. This segmentation provided greater insights into the corporate entrepreneurial theory of EO as suggested by Short et al. (2009) and Lumpkin and Dess (1996).

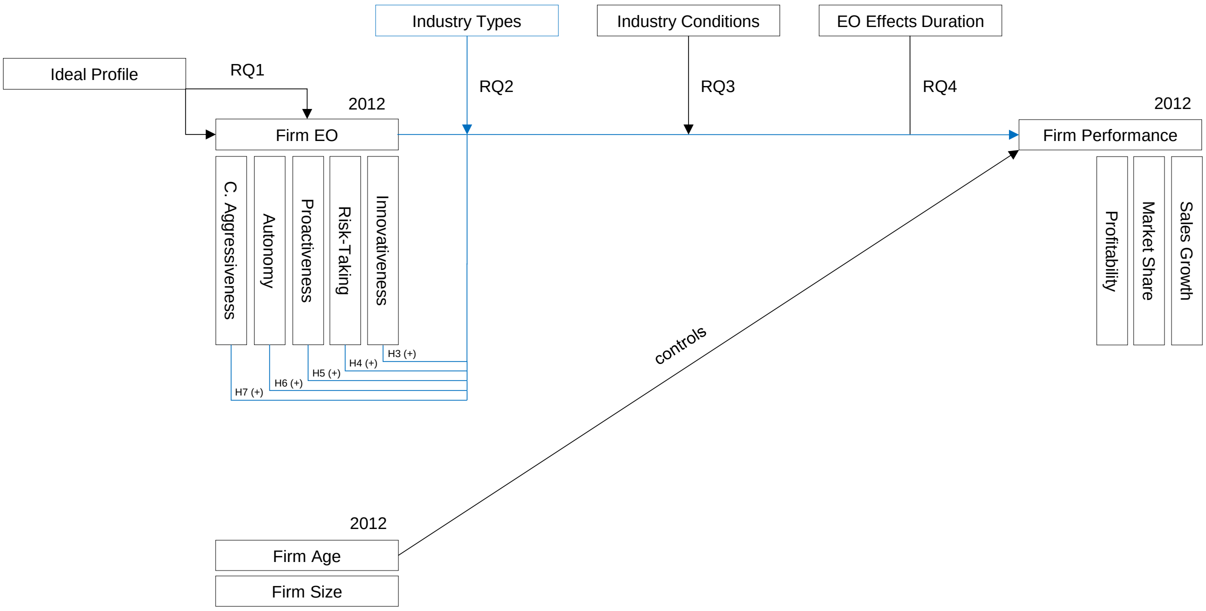


Figure 20: Data Analysis and Results: Hypotheses H3 to H7 Targeting RQ2 (data year 2012)

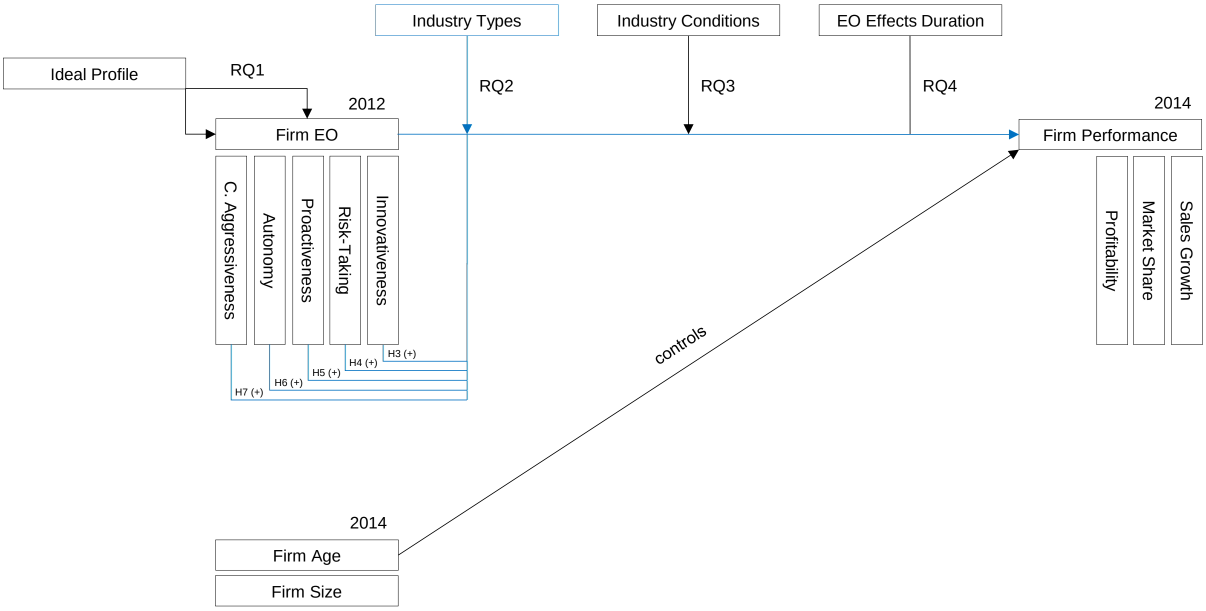


Figure 21: Data Analysis and Results: Hypotheses H3 to H7 Targeting RQ2 (performance lagged to 2014)

5.3.1. H3-H7: Initial Tests and Corrections of the Data

While assessing the correctness and structure of the sample, the following initial adjustments (data corrections on performance measures and CVs) and examinations (ANOVA and Cluster Analysis on EO dimensional level) of the dataset were executed. Firstly, the early descriptive statistics of the sample were studied including a general overview of the relevant research variables (A). This analysis was followed by an evaluation of non-transformed versus transformed variables to perform data corrections where required (B). After that, on the EO dimensions' level, an ANOVA was performed to study mean differences between the HT and LT groups (C) to receive first indications that would provide an answer for H3 to H7. Lastly, an EO-dimensional cluster analysis was completed to test whether firms can be categorised into specific clusters based on their EO levels and how these differ from their dimensional means (D).

5.3.1.1. Analysis and Results (A) Targeting H3-H7: Early Descriptive Statistics: General Overview of Variables

This section presents a general overview for each of the (non-transformed) study variables in the full datasets of the 10-K and LTS file sources to provide a better understanding of their setting and context. The descriptive statistics for each of the sample sources were presented in separate tables – Table 22 for 10-K and Table 23 for LTS – including their segmentation by the industry types of HT and LT (sub-tables A. and B. respectively). The tables represent the values of the variables when being non-transformed, yet for later regressions, particular variables (that are not independent variables) were transformed to limit possible data errors; for example, those identified through Skewness, Kurtosis, and Non-Normality tests as part of section 5.3.1.2.

<u>Results (A) Targeting H3-H7: Early Descriptive Statistics: General Overview of Variables: EO Dimensions</u>

As per the results, the minimum and maximum values of the five EO dimensions in 2012 (Table 22 for 10-K and Table 23 for LTS) ranged from zero for each construct (apart from one instance of A. 10K_HT innovativeness) up to a maximum value of 18.0 in HT (A. 10K_HT innovativeness) and 21.1 in LT firms (B. LTS_LT innovativeness). Comparing the minimum and maximum levels of the EO dimensions of the 10-K to the LTS files (Table 22 and Table 23) displayed similar ranges (zero for all constructs as a minimum and, for example, 6.2 versus 6.7 when comparing risk-taking of 10K_LT to LTS_LT as a maximum) for several dimensions. However, different values of EO levels have also been noticed, for example for autonomy with a maximum of 5.8 for HT and 10.9 for LT within the 10-K data as compared to a maximum of 8.1 for HT and 8.2 for LT in the LTS data. This range was expected and is accepted as both sample sources are focused on different target audiences. A similarity in ranges applied to the values of means and standard deviations as well. The individual variances of all EO dimensions and their respective industry types and sample sources were considered at a more detailed level along with the sections of the results summary (5.3.3).

<u>Results (A) Targeting H3-H7: Early Descriptive Statistics: General Overview of Variables: Sales Growth (2012 to 2014)</u>

The minimum and maximum values of sales growth increased from 2012 to 2014 (Table 22 for 10-K and Table 23 for LTS) into the positive for both A. 10K_HT and 10K_LT as seen in the maximum value of A. 10K_HT that grew from .5 to 1.2. A similar pattern was observed for the mean values of A. 10K_HT that increased within two years from .04 to .08. Within LT firms in the 10-K data contrary behaviour was reported according to which the value decreased from .08 to .05. This decrease matches the patterns of the LTS sample source.

<u>Results (A) Targeting H3-H7: Early Descriptive Statistics: General Overview of Variables: Market Share (2012)</u>

As no data were available for the 2014 market share, only 2012 data was reported (Table 22 for 10-K and Table 23 for LTS). For the minimum and maximum values, only small variances between HT and LT firms were observed as evidenced by the maximum value of LTS HT with .014 as compared to the LT value with .013 (Table 23). Mean values ranged in both sample sources and industry types between .000 and .001 (Table 22 for 10-K and Table 23 for LTS).

<u>Results (A) Targeting H3-H7: Early Descriptive Statistics: General Overview of Variables: Gross-Profit-Margin (2012 to 2014)</u>

The minimum and maximum values of gross-profit-margin decreased during the years of 2012 to 2014 (Table 22 for 10-K and Table 23 for LTS) into the negative for both A. 10K_HT/B. 10K_LT and A. LTS_HT/B. LTS_LT (except for the LT maximum values of both sample sources). For example, this effect was seen in the case of the minimum value of A. 10K_HT that decreased from .043 to .041. Mean values, on the other hand, increased over the duration of two years in all cases as seen in for B. LTS_LT from .390 to .399.

Results (A) Targeting H3-H7: Early Descriptive Statistics: General Overview of Variables: Return on Assets (2012 to 2014)

The results of the minimum and maximum values of the HT groups display that the values of return on assets increased when comparing 2012 to the 2014 data (Table 22 for 10-K and Table 23 for LTS) (as evidenced by the minimum value for 10K_HT from -.237 to -.097). For the LT groups, an opposite effect was observed as per which the values decreased in both sample sources from 2012 to 2014 (as seen the minimum value for 10K_LT from -.149 to -.243). Mean values, on the other hand, increased in all cases between 2012 and 2014 as evidenced by B. LTS_LT from .060 to .063.

Results (A) Targeting H3-H7: Early Descriptive Statistics: General Overview of Variables: Firm Size (2012 to 2014)

Values for firm size displayed opposite patterns when comparing HT to LT firms of both file sources from 2012 and 2014 (Table 22 for 10K and Table 23 for LTS). Minimum values of HT firms, such as for Cabot Oil & Gas with 589 employees in 2012 and 691 employees in 2014, increased while they decreased for LT firms; maximum values of HT firms decreased while they stayed consistent for LT firms within both sample sources of LTS and 10-K. In 2012, a firm in the HT group employed an average of 46k to 48k people while LT firms employed a mean workforce of 57k to 60k. The mean values of firm size increased in all instances from 2012 to 2014.

Results (A) Targeting H3-H7: Early Descriptive Statistics: General Overview of Variables: Firm Age (2012 to 2014)

When comparing the values of the firm age of the sample sources of 10-K to LTS similar ranges were observed (Table 22 for 10-K and Table 23 for LTS). Referring to the specific sample source of 10-K, in 2012 – for the HT group – the firm age minimum to maximum values ranged from 2 to 210 years with a mean of 56 years as compared to the LT group that had a range of 2 to 202 years with a mean of 72 years. In all instances, the mean values increased from 2012 to 2014. For further details on the individual values per variable, sample source, and industry type refer to Table 22 for 10-K and Table 23 for LTS.

Table 22: Data Analysis and Results: H3-H7: Early Descriptive Statistics: General Overview of Study Variables (10-K)

	A. 10K_HT					B. 10K_LT				
Variables	N	Minimum	Maximum	Mean	Std. Deviation	N	Minimum	Maximum	Mean	Std. Deviation
Independent Variables:										
IV: X1 Autonomy	143	0.000	5.750	0.768	0.950	275	0.000	10.850	0.842	1.259
IV: X2 Competitive Aggressiveness	143	0.000	2.560	0.192	0.380	275	0.000	3.540	0.173	0.351
IV: X3 Innovativeness	143	0.180	17.970	5.327	3.311	275	0.000	18.860	4.563	3.008
IV: X4 Proactiveness	143	0.000	13.600	0.811	1.754	275	0.000	7.860	0.487	1.062
IV: X5 Risk-Taking	143	0.000	8.180	0.452	1.001	275	0.000	6.190	0.378	0.777
Dependent Variables:										
DV: SG 2012 (in dec. %)	143	-0.749	0.448	0.039	0.144	275	-0.356	5.179	0.080	0.340
DV: SG 2014 (in dec. %)	143	-0.518	1.222	0.077	0.188	275	-0.430	1.352	0.050	0.130
DV: MS 2012 (in dec. %)	143	0.000	0.014	0.001	0.002	275	0.000	0.016	0.000	0.001
DV: GPM 2012 (in dec. %)	143	0.043	0.984	0.524	0.243	275	0.033	0.970	0.389	0.206
DV: GPM 2014 (in dec. %)	143	0.041	0.968	0.533	0.237	275	0.014	0.980	0.397	0.209
DV: ROA 2012 (in dec. %)	143	-0.237	0.283	0.073	0.069	275	-0.149	0.335	0.060	0.060
DV: ROA 2014 (in dec. %)	143	-0.097	0.349	0.079	0.056	275	-0.243	0.249	0.062	0.058
CV: Firm Size 2012 (in k)	143	0.589	434.246	46.977	68.601	275	0.635	2200.000	57.085	151.030
Control Variables:										
CV: Firm Size 2014 (in k)	143	0.691	379.592	48.202	68.061	275	0.580	2200.000	58.612	151.909
CV: Firm Age 2012 (in a)	143	2.000	210.000	55.601	45.071	275	2.000	202.000	71.895	49.143
CV: Firm Age 2014 (in a)	143	4.000	212.000	57.594	45.080	275	4.000	204.000	73.895	49.143

Table 23: Data Analysis and Results: H3-H7: Early Descriptive Statistics: General Overview of Study Variables (LTS)

	A. LTS_HT					B. LTS_LT				
Variables	N	Minimum	Maximum	Mean	Std. Deviation	N	Minimum	Maximum	Mean	Std. Deviation
Independent Variables:										
IV: X1 Autonomy	121	0.000	8.080	0.597	1.029	243	0.000	8.170	0.505	0.906
IV: X2 Competitive Aggressiveness	121	0.000	5.230	0.725	0.915	243	0.000	5.890	0.604	0.863
IV: X3 Innovativeness	121	0.000	13.780	5.742	3.438	243	0.000	21.100	4.163	2.919
IV: X4 Proactiveness	121	0.000	10.290	3.214	2.060	243	0.000	11.340	2.531	2.048
IV: X5 Risk-Taking	121	0.000	5.350	0.439	0.712	243	0.000	6.660	0.494	0.843
Dependent Variables:										
DV: SG 2012 (in dec. %)	121	-0.749	0.448	0.027	0.140	243	-0.233	5.179	0.080	0.353
DV: SG 2014 (in dec. %)	121	-0.518	1.222	0.084	0.202	243	-0.246	1.352	0.053	0.124
DV: MS 2012 (in dec. %)	121	0.000	0.014	0.001	0.002	243	0.000	0.013	0.000	0.001
DV: GPM 2012 (in dec. %)	121	0.043	0.984	0.515	0.244	243	0.033	0.970	0.390	0.209
DV: GPM 2014 (in dec. %)	121	0.041	0.968	0.526	0.237	243	0.014	0.980	0.399	0.213
DV: ROA 2012 (in dec. %)	121	-0.237	0.231	0.067	0.068	243	-0.149	0.326	0.060	0.059
DV: ROA 2014 (in dec. %)	121	-0.097	0.349	0.078	0.056	243	-0.243	0.249	0.063	0.059
Control Variables:										
CV: Firm Size 2012 (in k)	121	0.589	434.246	48.191	70.594	243	0.635	2200.000	60.360	160.466
CV: Firm Size 2014 (in k)	121	0.691	379.592	48.823	68.476	243	0.580	2200.000	62.217	161.497
CV: Firm Age 2012 (in a)	121	3.000	206.000	59.231	45.111	243	3.000	189.000	72.564	48.566
CV: Firm Age 2014 (in a)	121	5.000	208.000	61.223	45.122	243	5.000	191.000	74.564	48.566

5.3.1.2. Analysis and Results (B) Targeting H3-H7: Descriptive Statistics: Non-transformed versus Transformed Variables

To investigate for further statistics, Skewness and Kurtosis as well as Non-Normality tests were performed. These tests allowed for the determination of whether there were problems with the data that would require corrective action (i.e. transformation) from the researcher.

<u>Skewness and Kurtosis Tests</u>

Skewness measures the symmetry – or more specifically the lack of symmetry – within a sample population. Kurtosis, on the other hand, measures how heavy- or light-tailed the data is relative to a normal distribution. Both tests were performed with the help of the SPSS software. Normally distributed data range in their skewness values from -1.96 to 1.96 and in their kurtosis values from -3.00 to 3.00.

<u>Non-Normality Tests</u>

This test is used to examine whether the sample data was drawn from a normally distributed population. The case of normality is rejected when the significance p-value is smaller than or equal to .05. If the data is not normally distributed, common transformations include taking the “log” of the dependent variables for further analysis (performed within the SPSS software by the “log10” or “ln” transform functionality).

The Skewness and Kurtosis as well as Non-Normality tests were performed for each of the two sample sources of 10-K and LTS and both industry types of HT and LT. Refer to Table 24 for the results of the Skewness and Kurtosis tests (values displayed as a division of Skewness by Standard Error value) and Table 25 for the results of the Non-Normality tests. As part of the early descriptive statistics, these tests were accomplished for the non-transformed and transformed (ln and log10) dependent and control variables of sales growth, market share, gross-profit-margin, return on assets, firm size, and firm age. For all variables, the values for the relevant years of 2012 and 2014 were analysed except for 2012 MS where no data was available. For the benefit of the reader – and for the ease of comparing values – results of both perspectives of non-transformed and transformed variables were put into a single table (Table 24 for the Skewness and Kurtosis and Table 25 for the Non-Normality tests).

5.3.1.2.1. Descriptive Statistics: Non-transformed Dependent and Control Variables

Results (B) Targeting H3-H7: Descriptive Statistics: Skewness and Kurtosis Tests Non-Transformed Variables

Results of the Skewness and Kurtosis tests of the non-transformed variables (Table 24) displayed that for the sub-tables of the HT groups (A. 10K_HT and C. LTS_HT) only GPM 2012 and 2014 as well as ROA 2012 were in acceptable ranges as evidenced by GPM 2012 with a Skewness value of -.3 and a Kurtosis value of -2.5. For the benefit of the reader, values closer to zero – when comparing non-transformed to transformed variables – were highlighted by an underscore within the table. Analyses of the LT groups (B. 10K_LT and D. LTS_LT) resulted in a similar pattern since GPM 2012 and 2014 were within acceptable ranges. Moreover, for these groups, firm age of 2012 and 2014 were within acceptable ranges as well (respectively better than their transformed values). On the other hand, some results displayed particular outliers for the other variables as seen in firm size 2014 with a Skewness value of 14.0. For such instances, transformed variables were considered for later analyses (refer to the following sections).

Results (B) Targeting H3-H7: Descriptive Statistics: Non-Normality Tests Non-Transformed Variables

Referring to the results of the Non-Normality Tests for the non-transformed dependent and control variables, Table 25 displays that none of the Shapiro-Wilk Significance values was within the acceptable p > .05 range (sub-table A. to D.). Hence, the transformation of variables was considered to verify how the p-value would change.

5.3.1.2.2. Descriptive Statistics: Transformed Dependent and Control Variables

Results (B) Targeting H3-H7: Descriptive Statistics: Skewness and Kurtosis Tests Transformed Variables

The transformed variables were tested for “ln” as well as “log10” (transformation performed within the SPSS software). As the resulting values for both methods of analyses were identical, it was continued by using “ln” for further investigation. Referring to the Skewness and Kurtosis tests of the transformed variables (Table 24) results revealed that for the sub-tables of the HT groups (A. 10K_HT and C. LTS_HT) SG 2012 and 2014, MS 2012, ROA 2014, firm size 2012 and 2014, and firm age 2012 and 2014 were in more acceptable ranges as compared to their non-transformed values; for example as seen in the case of SG 2014 with a Skewness value of .5 and a Kurtosis value of -.4 as compared to its non-transformed counterparts of 11.9 and 31.5. Hence, only the values of the non-transformed variables were better for GPM 2012 and 2014 and ROA 2012 within the HT groups. Analyses of the Skewness and Kurtosis levels of the LT groups (B. 10K_LT and D. LTS_LT) exposed that the transformed variables of SG 2012 and 2014, MS 2012, ROA 2014, and firm size 2012 and 2014 were within the typical acceptable ranges. Thus, referring to the non-transformed values within the LT groups the variables of GPM 2012 and 2014, ROA 2012, and firm age 2012 and 2014 were in more acceptable ranges.

Results (B) Targeting H3-H7: Descriptive Statistics: Non-Normality Tests Transformed Variables

Results of the Non-Normality tests of the transformed variables (Table 25) displayed an overall improvement in p-values in several instances. Within the HT groups (A. 10K_HT and C. LTS_HT) SG 2014, firm size 2012 and 2014, and firm age 2012 and 2014 were typically distributed. Referring to the LT groups (B. 10K_LT and D. LTS_LT) the values of firm size 2012 and 2014 reached the significant p-value of >.05.

Table 24: Data Analysis and Results: H3-H7: Descriptive Statistics: Test for Skewness and Kurtosis (DVs and CVs)

	A. 10K_HT				B. 10K_LT				C. LTS_HT				D. LTS_LT			
	10K_HT non-transformed		10K_HT transformed (ln)		10K_LT non-transformed		10K_LT transformed (ln)		LTS_HT non-transformed		LTS_HT transformed (ln)		LTS_LT non-transformed		LTS_LT transformed (ln)	
	Skewness/Std. Error	Kurtosis/Std. Error	Skewness/Std. Error	Kurtosis/Std. Error	Skewness/Std. Error	Kurtosis/Std. Error	Skewness/Std. Error	Kurtosis/Std. Error	Skewness/Std. Error	Kurtosis/Std. Error	Skewness/Std. Error	Kurtosis/Std. Error	Skewness/Std. Error	Kurtosis/Std. Error	Skewness/Std. Error	Kurtosis/Std. Error
DV: SG 2012	-4.0	15.8	-5.4	5.0	85.6	637.4	-2.1	4.6	-5.4	17.8	-4.7	4.7	81.2	586.7	-2.2	4.9
DV: SG 2014	11.9	31.5	0.5	-0.4	24.4	129.8	-8.5	13.6	10.1	24.4	0.4	-0.6	31.6	159.5	-8.4	15.0
DV: MS 2012	26.6	85.0	0.8	-1.3	52.7	242.3	1.6	-1.3	24.6	76.5	0.6	-0.9	46.2	210.8	1.4	-1.4
DV: GPM 2012	-0.3	-2.5	-6.5	4.6	5.3	0.7	-5.6	3.7	0.1	-2.3	-5.8	4.1	5.2	0.6	-5.0	3.5
DV: GPM 2014	-0.4	-2.4	-7.2	6.5	6.2	1.9	-7.9	11.7	0.0	-2.2	-6.3	5.8	6.0	1.8	-7.6	11.9
DV: ROA 2012	-3.2	8.9	-6.9	7.0	8.3	11.1	-8.3	12.4	-4.4	8.5	-6.4	6.0	6.3	7.7	-8.3	12.3
DV: ROA 2014	-21.4	59.6	-9.9	22.3	3.0	10.3	-6.0	3.4	4.9	12.4	-4.4	5.3	2.3	10.2	-5.9	3.8
CV: Firm Size 2012	14.0	24.8	-0.2	-1.4	74.0	509.0	1.5	0.6	12.8	22.6	-0.3	-1.3	65.5	423.1	1.6	0.3
CV: Firm Size 2014	12.3	17.3	-0.2	-1.5	72.8	496.0	1.6	0.5	11.1	15.5	-0.4	-1.4	64.3	411.0	1.6	0.3
CV: Firm Age 2012	6.5	3.6	-0.6	-1.6	3.0	-3.1	-6.6	3.2	4.7	1.6	-1.6	-1.4	2.6	-3.1	-6.6	3.7
CV: Firm Age 2014	6.5	3.6	-2.8	3.8	3.0	-3.1	-6.3	2.3	4.7	1.5	-3.7	3.9	2.6	-3.1	-5.0	0.2

Table 25: Data Analysis and Results: H3-H7: Descriptive Statistics: Test for Non-Normality (Shapiro-Wilk Significance DVs and CVs)

	A. 10K_HT		**B. 10K_LT**		**C. LTS_HT**		**D. LTS_LT**	
	10K_HT non-transformed	**10K_HT transformed (ln)**	**10K_LT non-transformed**	**10K_LT transformed (ln)**	**LTS_HT non-transformed**	**LTS_HT transformed (ln)**	**LTS_LT non-transformed**	**LTS_LT transformed (ln)**
DV: SG 2012	0.000	0.002	0.000	0.003	0.000	0.007	0.000	0.003
DV: SG 2014	0.000	<u>0.987</u>	0.000	0.000	0.000	<u>0.879</u>	0.000	0.000
DV: MS 2012	0.000	0.021	0.000	0.046	0.000	<u>0.051</u>	0.000	0.038
DV: GPM 2012	0.005	0.000	0.000	0.018	0.011	0.002	0.000	<u>0.083</u>
DV: GPM 2014	0.008	0.000	0.000	0.031	0.018	0.003	0.000	<u>0.163</u>
DV: ROA 2012	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
DV: ROA 2014	0.000	0.000	0.000	0.000	0.000	0.040	0.000	0.000
CV: Firm Size 2012	0.000	<u>0.236</u>	0.000	<u>0.774</u>	0.000	<u>0.210</u>	0.000	<u>0.649</u>
CV: Firm Size 2014	0.000	<u>0.157</u>	0.000	<u>0.756</u>	0.000	<u>0.142</u>	0.000	<u>0.611</u>
CV: Firm Age 2012	0.000	<u>0.347</u>	0.000	0.000	0.000	<u>0.236</u>	0.000	0.000
CV: Firm Age 2014	0.000	<u>0.215</u>	0.000	0.000	0.000	<u>0.186</u>	0.000	0.000

Derived from the results of the Skewness and Kurtosis as well as the Non-Normality tests, the final variables to be employed for further analyses were summarised for each sample source and industry type – either transformed or non-transformed. Refer to Table 26 for this complete list. Previous analyses of descriptive statistics revealed that the variables within the same industry type (HT and LT) were similarly normally distributed. Hence, the selected variables for further analyses match within one industry type (A. 10K_HT with C. LTS_HT and B. 10K_LT with D. LTS_LT). For example, for the HT groups the following variables were selected: SG 2012 and 2014 ("ln"), MS 2012 ("ln"), GPM 2012 and 2014 (non-transformed), ROA 2012 and 2014 ("ln"), firm size 2012 and 2014 ("ln"), and firm age 2012 and 2014 ("ln"). Only for the instance of ROA 2012 a manual adjustment was performed to receive a consistent level of either transformed or non-transformed variables per performance measure. Hence, the ROA 2012 transformed variables were employed. Referring to the overall perspective of both industry types of HT versus LT, results match for all variables except firm age, herein, the transformed values for HT and the non-transformed for LT firms were more normally distributed. Henceforth, for the ease of further analyses – where it is required to put the firm age of HT and LT firms into one model (such as the regression model) – the transformed variables were used.

Table 26: Data Analysis and Results: H3-H7: Descriptive Statistics: Variables selected for final Analyses (DVs and CVs)

	A. 10K_HT		**B. 10K_LT**		**C. LTS_HT**		**D. LTS_LT**	
	10K_HT non-transformed	**10K_HT transformed (ln)**	**10K_LT non-transformed**	**10K_LT transformed (ln)**	**LTS_HT non-transformed**	**LTS_HT transformed (ln)**	**LTS_LT non-transformed**	**LTS_LT transformed (ln)**
DV: SG 2012		x		x		x		x
DV: SG 2014		x		x		x		x
DV: MS 2012		x		x		x		x
DV: GPM 2012	x		x		x		x	
DV: GPM 2014	x		x		x		x	
DV: ROA 2012		x		x		x		x
DV: ROA 2014		x		x		x		x
CV: Firm Size 2012		x		x		x		x
CV: Firm Size 2014		x		x		x		x
CV: Firm Age 2012		x	x			x	x	
CV: Firm Age 2014		x	x			x	x	

5.3.1.3. Analysis and Results (C) Targeting H3-H7: ANOVA Comparing EO Dimension Means for HT versus LT Group

Another one-way ANOVA was performed to evaluate the mean differences in the levels of the EO dimensions between the HT and LT samples. This analysis was done for both the LTS and 10-K file sources. This has been employed as the starting point of an indicative test to ascertain whether firm EO is more strongly related to business performance in HT than in LT industries (targeting H3 to H7); here, by evaluating whether the dimensions' mean levels (and mean square levels) of EO were dissimilar when comparing the overall mean scores of HT to LT firms.

<u>Results (C) Targeting H3-H7: A ANOVA Comparing EO Dimension Means for HT versus LT Group</u>

As displayed within Table 27, results revealed that when comparing the mean (and mean square) values of the groups of LTS HT versus LTS LT as well as 10-K HT versus 10-K LT similar results were reported. According to these, within both sample sources, the mean square scores of innovativeness (H3) and proactiveness (H5) were significantly different ($p<.05$) while no significant difference was found for the other dimensions of autonomy (H6), competitive aggressiveness (H7), and risk-taking (H4) ($p>.05$). Referring to H3-7, this is the first indication on innovativeness and proactiveness having varying levels when comparing firms of HT to LT industries. Additionally, it was reported that the mean square values for innovativeness and proactiveness were numerically much higher than those of the other variables.

Table 27: Data Analysis and Results: H3-H7: ANOVA Comparing EO Dimension Means for HT versus LT firms

A. ANOVA LTS_HT vs LTS_LT all
Group 1 N = 125
Group 2 N = 247

	Sum of Squares	df	Mean Square	F	Sig.
X1 Autonomy	0.506	1.000	0.506	0.571	0.450
X2 Competitive Aggressiveness	0.574	1.000	0.574	0.724	0.395
X3 Innovativeness	197.196	1.000	197.196	20.794	0.000
X4 Proactiveness	37.292	1.000	37.292	8.830	0.003
X5 Risk-Taking	0.132	1.000	0.132	0.202	0.653

B. ANOVA 10K_HT vs 10K_LT all
Group 1 N = 147
Group 2 N = 280

	Sum of Squares	df	Mean Square	F	Sig.
X1 Autonomy	0.815	1.000	0.815	0.611	0.435
X2 Competitive Aggressiveness	0.033	1.000	0.033	0.257	0.613
X3 Innovativeness	64.002	1.000	64.002	6.534	0.011
X4 Proactiveness	9.110	1.000	9.110	4.744	0.030
X5 Risk-Taking	0.393	1.000	0.393	0.539	0.463

Furthermore, when comparing the values of mean square scores directly, as previously presented along with Table 14, results revealed higher levels of EO within HT firms in LTS for autonomy, competitive aggressiveness, innovativeness, and proactiveness as well as higher levels of EO within HT firms in 10-K for competitive aggressiveness, innovativeness, proactiveness, and risk-taking. Solely risk-taking within the LTS and autonomy in the 10-K data had smaller values for HT as compared to LT firms. This observation equals to the findings from the ANOVA on (at least) innovativeness and proactiveness being of higher value in HT firms and will be revisited along with regression tests as part of section 5.3.2 to examine whether the five EO dimensions are more strongly linked to business performance in HT than in LT industries.

5.3.1.4. Analysis and Results (D) Targeting H3-H7: EO-dimensional Cluster Analysis to Test for Outliers

In the following section, cluster analyses – as a form of an explorative and multivariate method to identify particular structures within the populations – were performed. Within this study, these helped to localise homogeneous groups in the sources of 10-K versus LTS and HT versus LT with regards to possible firm-groupings respective to their specific EO levels. Furthermore, clusters or groups that are distinct from one another were identified based on the distance of the firms EO dimensions to the mean values per dimension (outliers).

The following clustering criteria were defined: (i) the EO values were considered on the dimensional level (for all five dimensions), (ii) four datasets of HT versus LT and 10-K versus LTS were identified, (iii) EO data of 2012 was employed, and (iv) the results were derived on the basis of the distance of the specific clusters to the mean of the respective dimensions. In specific cases, this may allow for the potential exclusion of firms from the samples (existence of outliers) to take corrective action for further analyses. In preparation for these tests, the firm EO scores of each dimension were standardised via their respective groups (z-score) with the help of the SPSS software. When performing the analyses, the cluster memberships were saved for the specific companies to identify the names of the firms that were outliers.

<u>Results (D) Targeting H3-H7: EO-dimensional Cluster Analysis to Test for Outliers</u>

As presented in Table 28 – and its sub-tables A. to D. for the industry types and sample sources – the HT groups were categorised into seven or more clusters to form a small distribution of up to 78 firms per cluster (as seen in A. 10K_HT); for the LT groups overall ten clusters were required to accommodate single clusters comprising of less than or equal to 144 firms (B. 10K_LT). Herein, a firm could only belong to one cluster alone. Results revealed that the standardised dimensional EO scores built seven instances in total where only a single firm was part of one cluster each (highlighted by an underscore in Table 28); hence, such firm was regarded as outlier considering the firm's individual EO levels at the five dimensions. The firms being the only ones in their cluster were: Ford Motor Co (F), Marathon Petroleum Corp. (MPC) (A. 10K_HT); Becton Dickinson & Co. (BDX), Xcel Energy Inc. (XEL) (B. 10K_LT); Automatic Data Processing (ADP), Citrix Systems Inc. (CTXS) (C. LTS_HT); and Kinder Morgan Inc. (KMI) (D. LTS_LT).

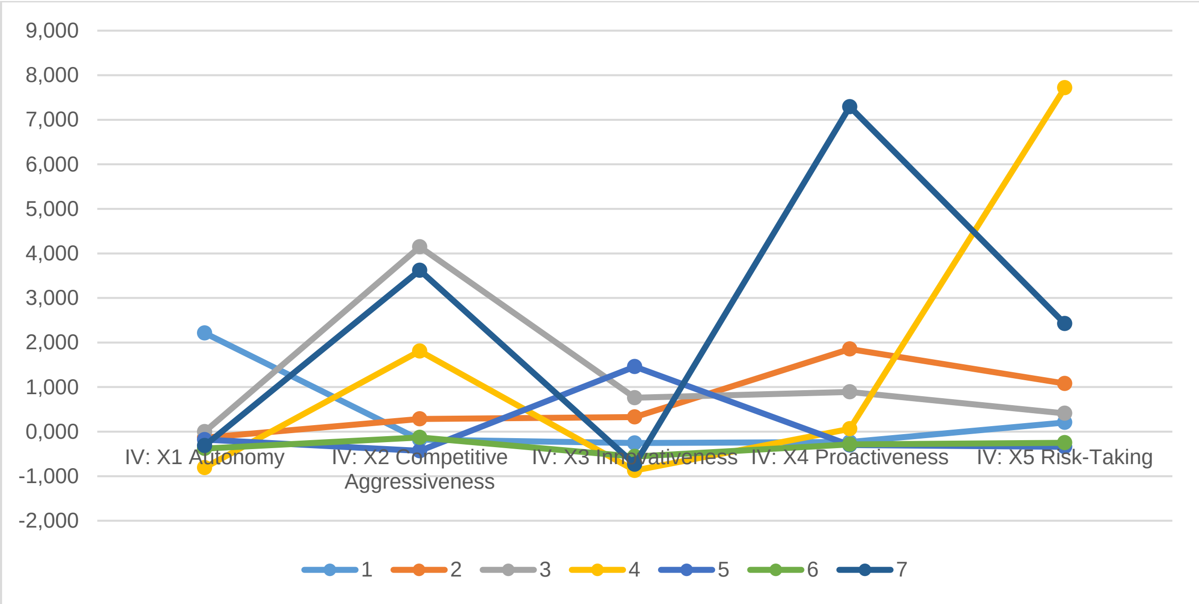
Table 28: Data Analysis and Results: H3-H7: Early Descriptive Statistics: EO-dimensional Cluster Analysis Numbers per Cluster

A. 10K_HT: Number of Cases in each Cluster			**B. 10K_LT: Number of Cases in each Cluster**		
	ID	**Quantity**		**ID**	**Quantity**
Cluster	1	17	**Cluster**	1	5
	2	13		2	22
	3	4		3	144
	4	1		4	14
	5	29		5	1
	6	78		6	22
	7	1		7	4
Valid		**143**		8	1
Missing		**0**		9	57
				10	5
			Valid		**275**
			Missing		**1**

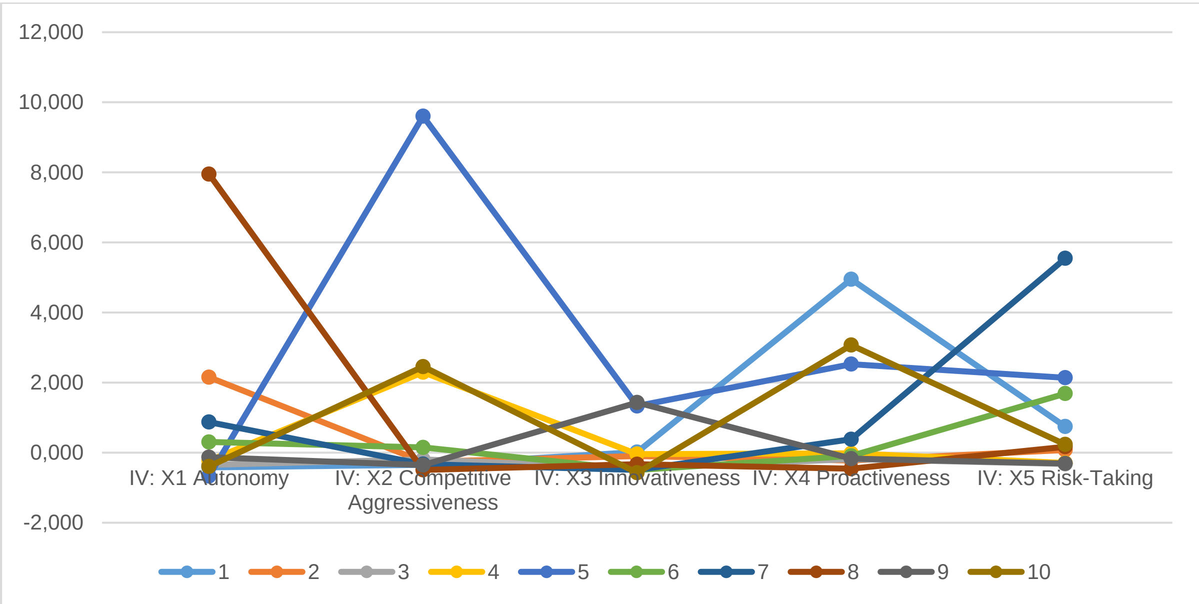
C. LTS_HT: Number of Cases in each Cluster			D. LTS_LT: Number of Cases in each Cluster		
	ID	Quantity		ID	Quantity
Cluster	1	10	**Cluster**	1	11
	2	1		2	2
	3	2		3	1
	4	30		4	2
	5	1		5	2
	6	43		6	37
	7	34		7	34
Valid		**121**		8	17
Missing		**1**		9	113
				10	24
			Valid		**243**
			Missing		**0**

As the following Figure 22 – and its sub-figures A. to D. for the industry types and sample sources – presents, the firm EO scores per cluster ranged substantially in the positive direction with only single instances going below zero (as evidenced by D. LTS_LT D. cluster 3). Comparing the averaged mean values (as overall EO measure) per cluster to the other clusters within the same group (of A. 10K_HT, B. 10K_LT, C. LTS_HT, and D. LTS_LT) displayed no patterns of more powerful or lower levels of EO with the single firm clusters. However, referring to the results of earlier sections, specifically of Table 22 and Table 23 on the overview of study variables, allowed for an indication on all clusters (comprising only one firm) differing greatly in their dimensional cluster mean values when compared to the mean values of the non-cluster groups of HT versus LT and 10-K versus LTS; hence, they can be regarded as the outliers. Such as within A. 10K_HT, wherein the cluster number four comprises only one firm with strongly varying mean values of the cluster (displayed outside brackets) as compared to the non-cluster values (as displayed in brackets): autonomy -.8 (.8), competitive aggressiveness 1.8 (.2), innovativeness -.9 (5.3), proactiveness .1 (.8), and risk-taking 7.7 (.5). The same distinct differences were observed for the other single-cluster-firms as well. Referring to these firms, the following dimensions were predominantly present when considering the most considerable distances to the non-cluster mean values, thus, causing the specific firms to not fit any other cluster: proactiveness and risk-taking (A. 10K_HT); autonomy and competitive aggressiveness (B. 10K_LT); autonomy and risk-taking (C. LTS_HT); and risk-taking (D. LTS_LT). After a careful review of the cluster analyses' results and the correctness of the dimensional EO scores of these single-cluster firms (re-test and re-evaluation of the individual EO scores for these firms via the re-application of the DICTION analyses), it was decided to retain these firms as part of the data to be used for later analyses. This step aligns with Miller's (2011) argument that a firm needs to be high on every dimension to be entrepreneurial (this will be debated within later parts of the study), moreover, it keeps the natural variability of firms within the datasets. Even though none of the outlying firms was within the top 10% or poorest 10% of performers, their unique patterns at specific dimensions may be the reason for them being presented in the middle group. Hence, these results are regarded as the first basis for further investigation of the individual impact of the five EO dimensions on business performance; thus, making them a vital factor for consideration.

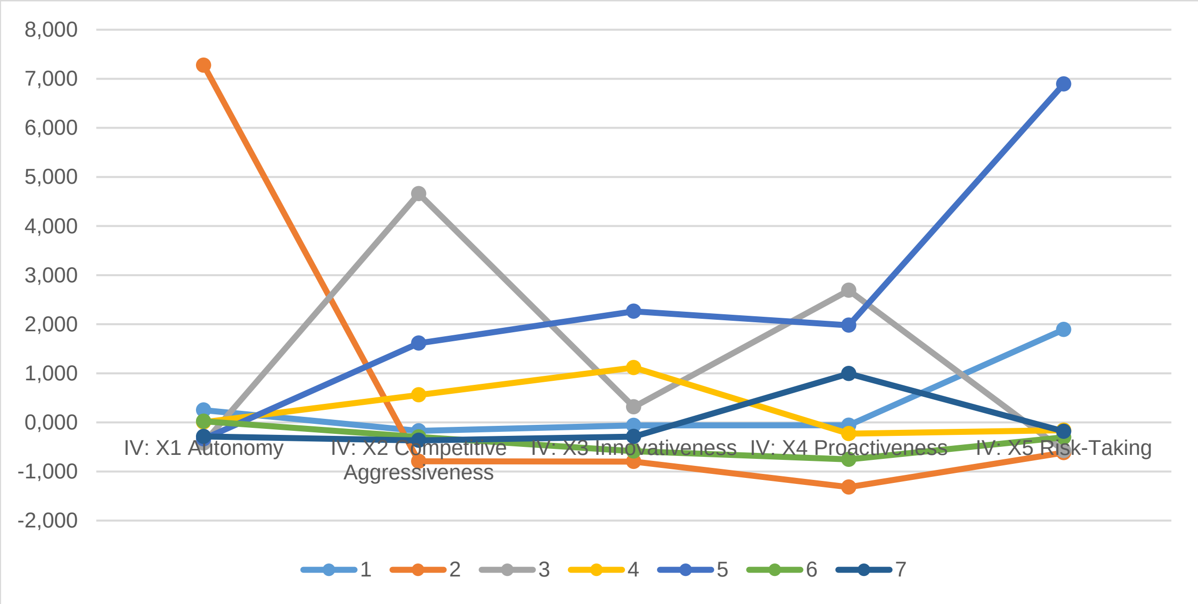
Cluster Analysis Graphical View: Sub-figure A. 10K_HT



Cluster Analysis Graphical View: Sub-figure B. 10K_LT



Cluster Analysis Graphical View: Sub-figure C. LTS_HT



Cluster Analysis Graphical View: Sub-figure D. LTS_LT

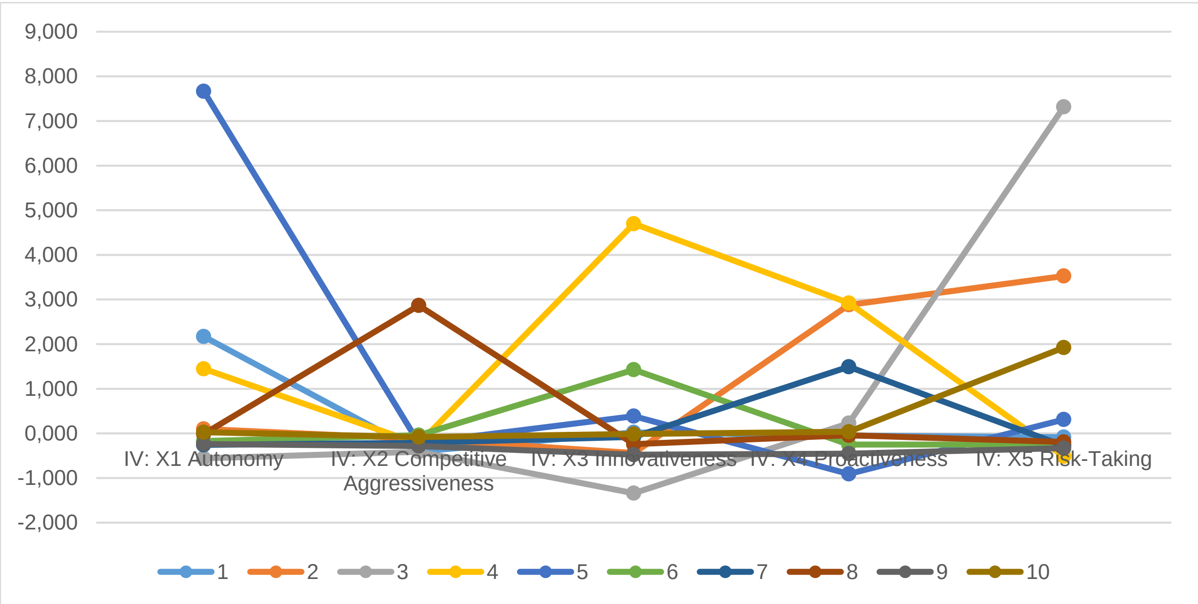


Figure 22: Data Analysis and Results: H3-H7: Early Descriptive Statistics: EO-dimensional Cluster Analysis Graphical View

5.3.2. Analysis and Results (E) Targeting H3-H7: Statistics: Interaction Terms Regression Analysis

As the foundation for further hypotheses testing of H3 to H7 (stronger effect of EO dimensions within HT firms) – and examining the relations among the relevant variables – 'interaction term' analyses based on regression models were performed (E). According to the interaction term analysis, two independent variables interact when the effect of one independent variable on a dependent variable differs depending on the level of the interaction variable. Moreover, the interaction may be present within a relationship of three or more variables when the simultaneous impact of two variables on a third one is not additive (Agresti & Kateri, 2011). Here, it was tested whether and to what extent the interaction effects of the HT and LT industry types on the relationship between EO dimensions and firm performance can be depicted.

In the course of these analyses, individual tests were performed for each of the four performance variables for 2012 and 2014 values. That is, there are analyses predicting sales growth (SG of 2012 & 2014), market share (MS of 2012), gross-profit-margin (GPM of 2012 & 2014), and return on assets (ROA of 2012 & 2014). Their results are presented for each performance indicator within Table 31 to Table 34 separated by the sub-tables A. and B. for the years of 2012 and 2014 and split by the two sample sources of 10-K and LTS. To examine potential interaction effects by the technological level of the industry on a firm's EO-performance linkage, HT and LT firms were combined into one dataset for each of the two sample sources (sample 1: 10-K; sample 2: LTS). The industry types were operationalised as a dummy variable (indicator variable) where HT took the value of "0" and LT the value of "1" (included in Regression Model 1). These dummy variables helped to indicate the absence or presence of the categorical effects that may shift the outcome of an interaction. Each sub-table reports the results of three regression models: Model 1 includes predictors for the CVs of firm age and size as well as for the dummy variable (HT vs LT); Model 2 is similar to Model 1 with the addition of the IVs of the EO dimensions as centred terms; Model 3 is similar to

Model 2 with the addition of the multiplicative interaction terms (i.e., an EO dimension – of the centred terms – multiplied by the technology dummy code).

In order to prepare these analyses and receive the regression results as presented in Table 31 to Table 34 along with this study's aims, the following steps were followed. Firstly:

(A) For the performance indicators of sales growth, market share, return on assets, and gross-profit-margin: Financial figures were used from the analysis of the first research question; where missing, means were calculated (with the SPSS software); all percentages were converted into zero to one three-digit decimal values.

(B) Referring to merging performance indicators with EO levels into one working file: Both performance indicators and EO levels for each firm were merged into four separate Microsoft Excel tables of LTS_HT (125 firms), LTS_LT (247 firms), 10K_HT (147 firms), and 10K_LT (280 firms) to evaluate the EO-performance relationship efficiently.

(C) Referring to inactive firms within the sample: Some firms were inactive starting from 2015; hence, were excluded from further investigation of this research question. After this task, the following numbers of firms remained: LTS_HT (121 firms), LTS_LT (243 firms), 10K_HT (143 firms), and 10K_LT (275 firms).

Secondly, non-transformed and transformed variables were used according to their previous categorisations resulting from the descriptive statistics of non-Normality as well as Skewness and Kurtosis (see Table 26); for example, transformed variables of SG versus non-transformed of GPM. Then, centred dimension scores (here CT's in Model 2) for each of the five IVs were calculated as per the firms within the two datasets of 10-K and LTS by extracting the means for each of the EO dimensions (with the help of the SPSS software). Mean values per EO dimension of the 10-K data are displayed within Table 29, and the means for LTS within Table 30. Next, the centred dimension scores were calculated by subtracting the dimensional mean values from a firm's individual EO score. This calculation was accomplished by using the transform functionality within the SPSS software. The five centred dimension scores for each of the EO dimensions were saved within the data file for further analyses. Lastly, (here interaction terms in Model 3) interaction scores for each of the five EO dimensions were calculated by multiplying the dummy variable value with the centred dimension score per firm (= Dummy Variable * Centred Terms (CT)).

Table 29: Data Analysis and Results: H3-H7: Statistics: Interaction Terms based Mean Values per Dimension: 10-K

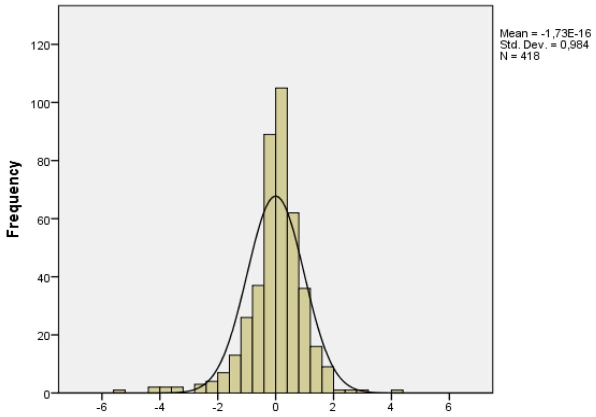
	X1 Autonomy	X2 Competitive A.	X3 Innovativeness	X4 Proactiveness	X5 Risk-Taking
Mean	0.817	0.179	4.824	0.598	0.403
N	418	418	418	418	418
Std. Deviation	1.162	0.361	3.132	1.346	0.860

Table 30: Data Analysis and Results: H3-H7: Statistics: Interaction Terms based Mean Values per Dimension: LTS

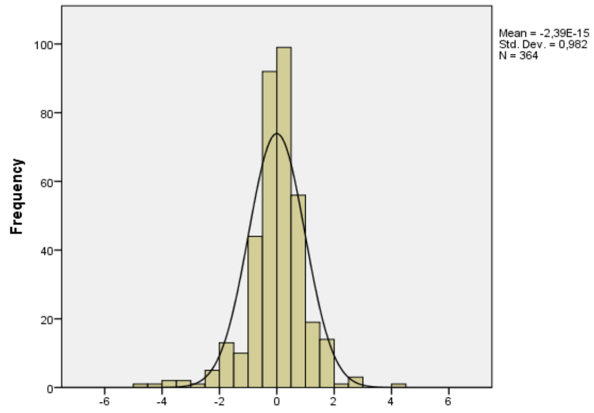
	X1 Autonomy	X2 Competitive A.	X3 Innovativeness	X4 Proactiveness	X5 Risk-Taking
Mean	0.535	0.644	4.688	2.758	0.475
N	364	364	364	364	364
Std. Deviation	0.948	0.881	3.185	2.074	0.801

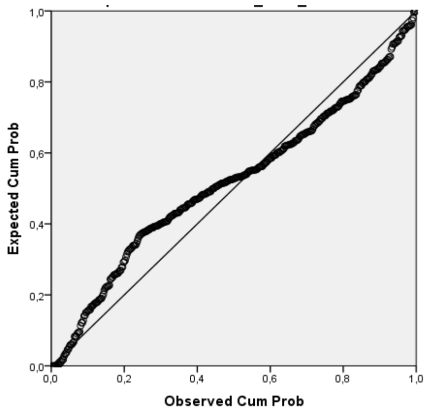
Figure 23 and its sub-graphics A. to G. represent an overview of standardised residuals as derived from the interaction terms analyses in the form of, firstly, histograms and, secondly, Normal P-P Plots of Regression. By separating all relevant dependent variables by file source, transformation (yes, no), and year, it was reported that the residuals of the regression analyses were normally distributed according to these diagrams. Conclusively, the corresponding dependent variables were allowed consideration in hypotheses testing.

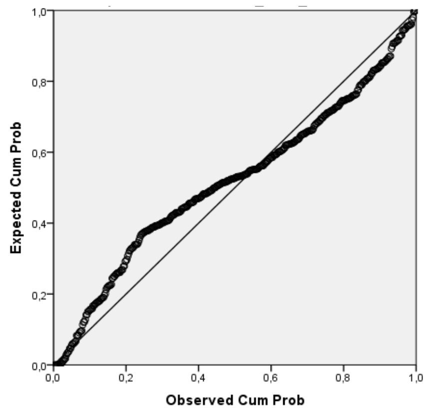
A. 10K_ln_2012_SG



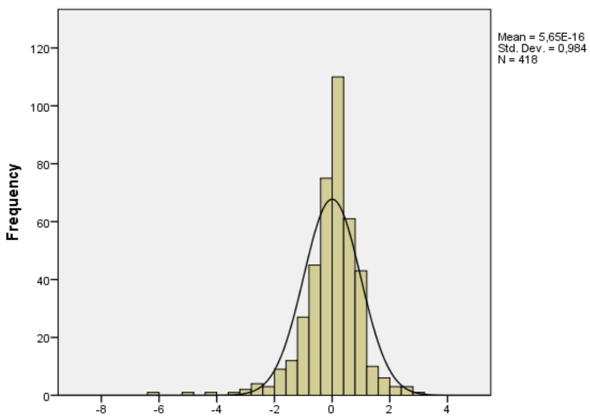
A. LTS_ln_2012_SG



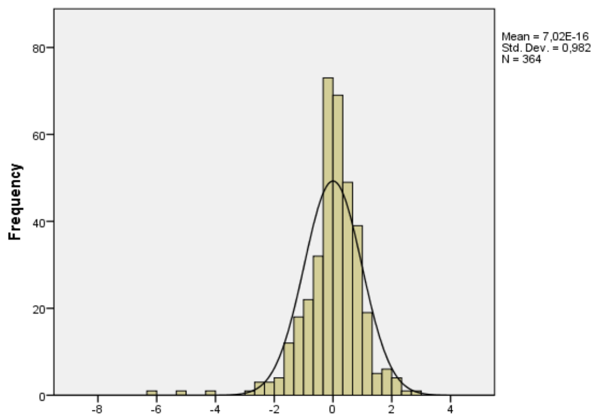


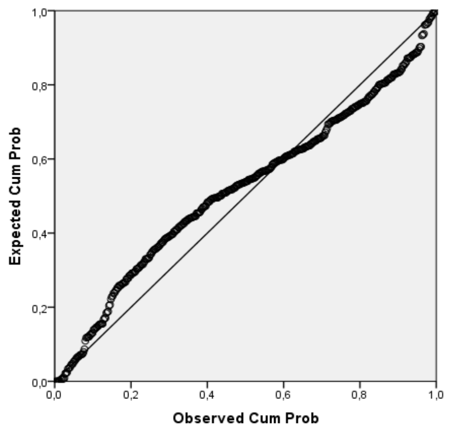


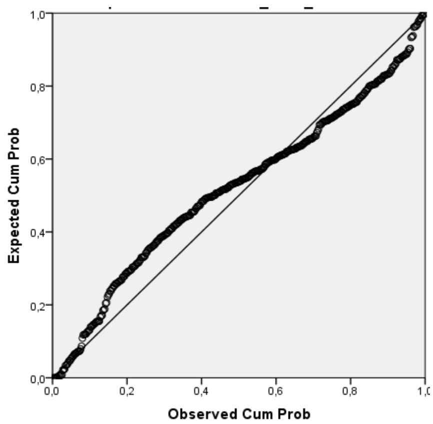
B. 10K_ln_2014_SG



B. LTS_ln_2014_SG

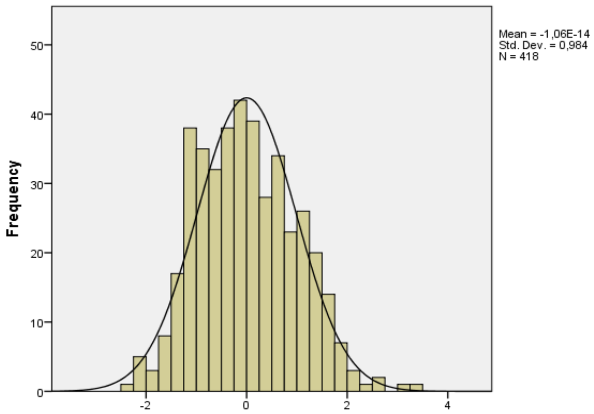


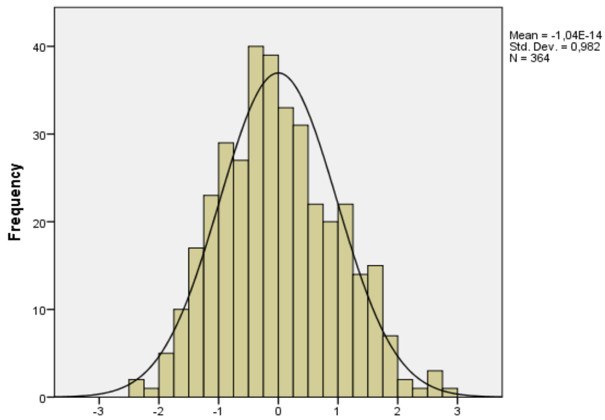


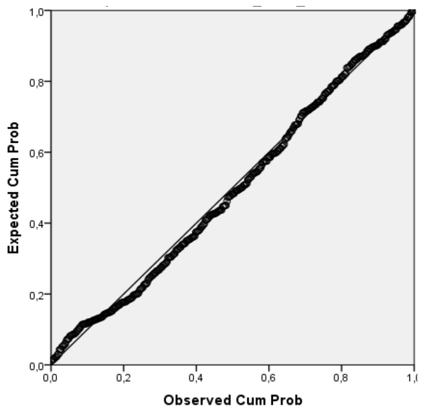


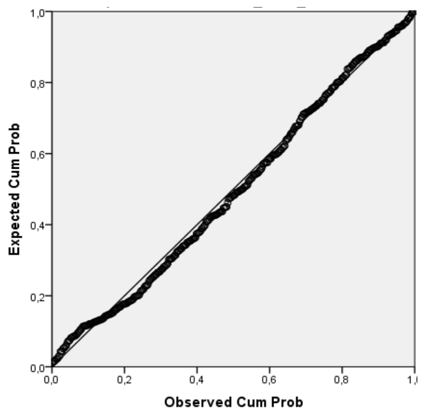
C. 10K_ln_2012_MS

C. LTS_ln_2012_MS

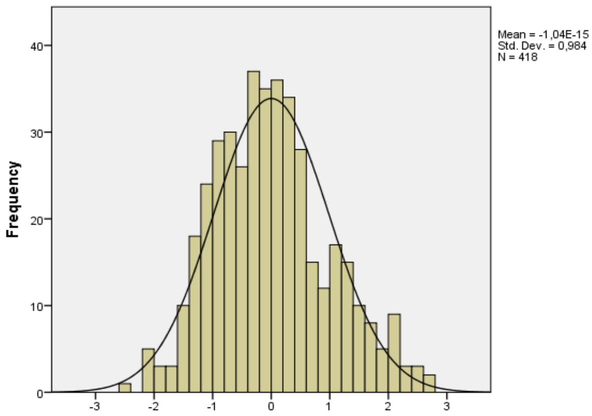




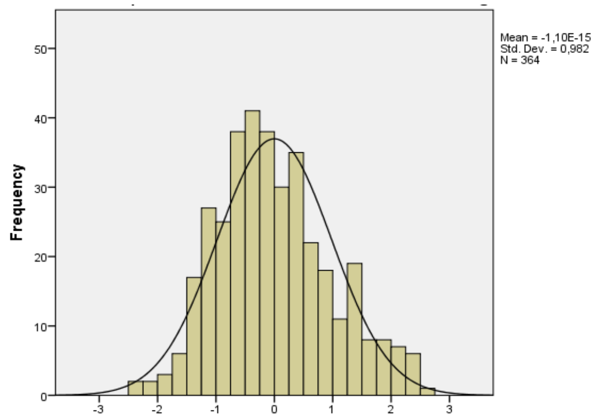


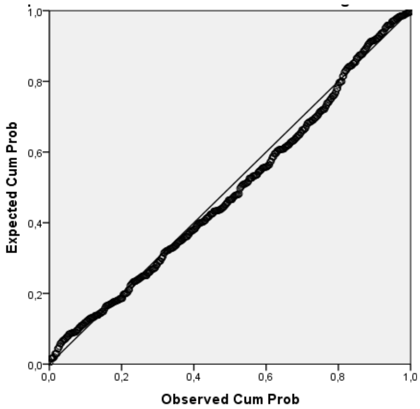


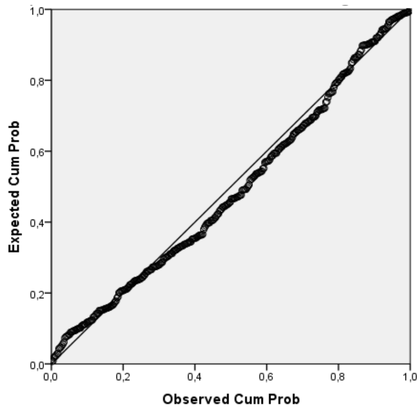
D. 10K_non-ln_2012_GPM



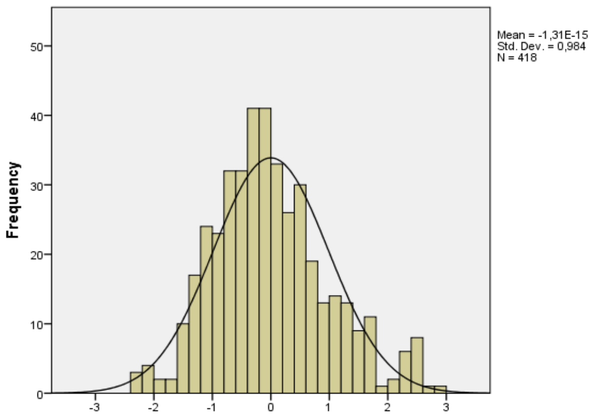
D. LTS_non-ln_2012_GPM



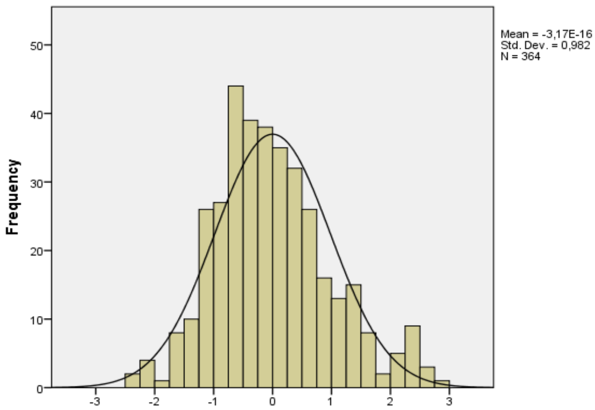


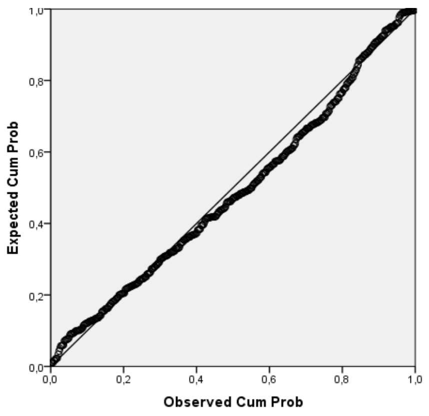


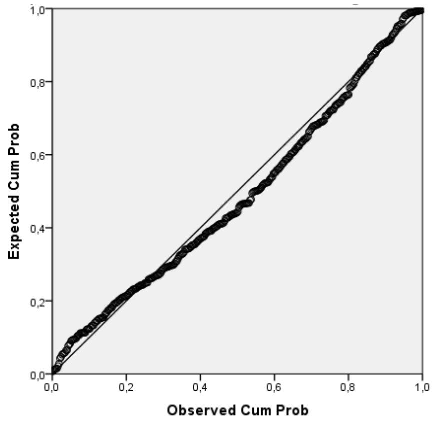
E. 10K_non-ln_2014_GPM



E. LTS_non-ln_2014_GPM

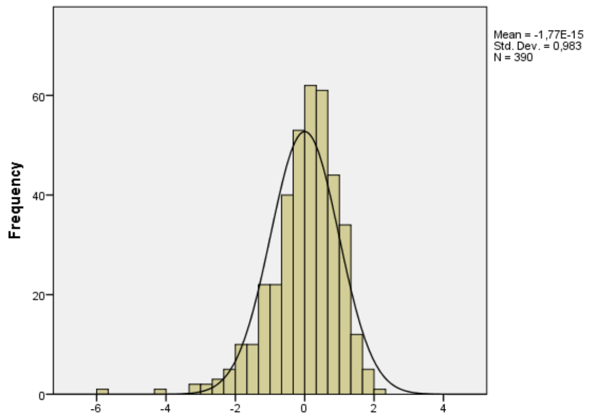


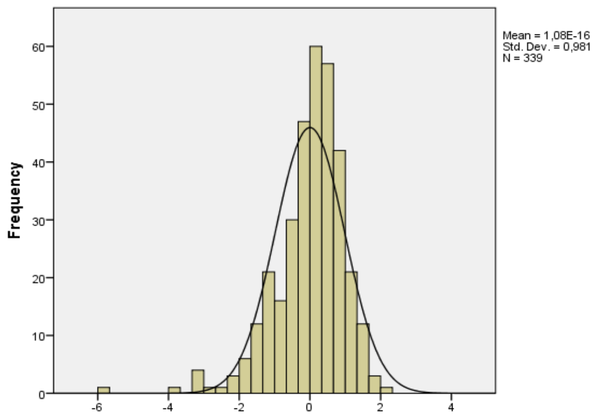


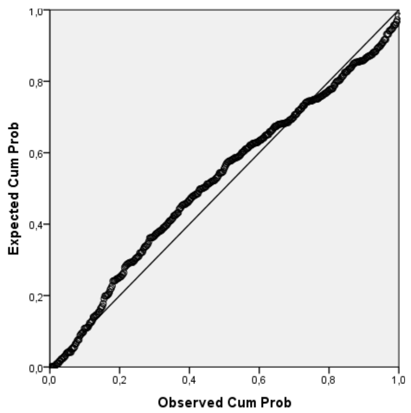


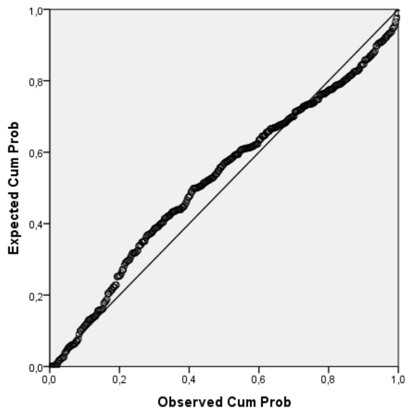
F. 10K_ln_2012_ROA

F. LTS_ln_2012_ROA

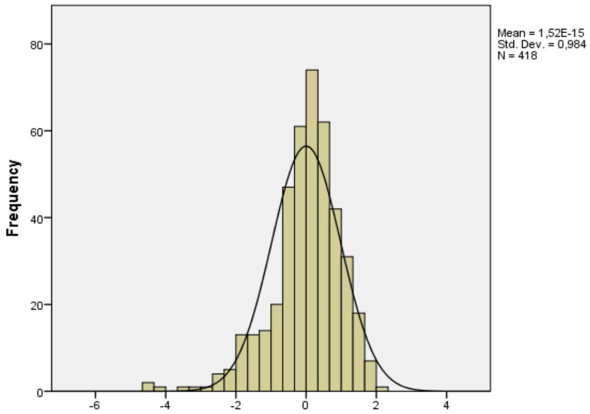


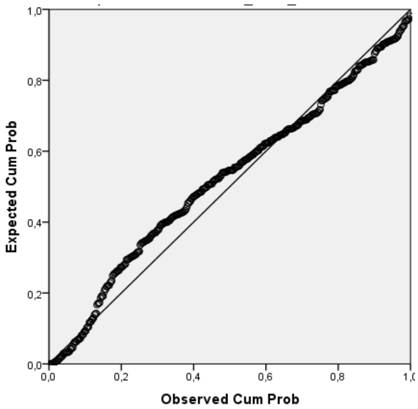




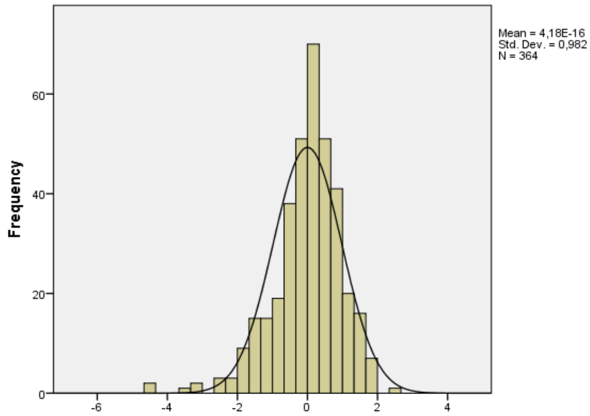


G. 10K_ln_2014_ROA





G. LTS_ln_2014_ROA



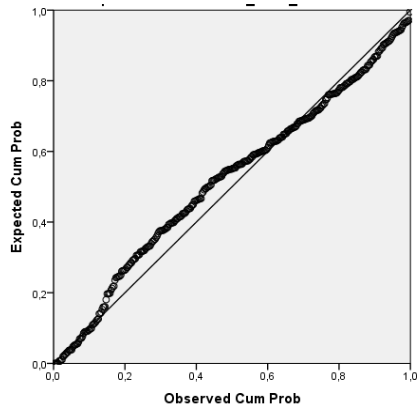


Figure 23: Data Analysis and Results: H3-H7: Statistics: Histograms and Normal P-P Plots of Interaction Terms Regression - Standardised Residual Variables Overview

Table 31: Data Analysis and Results: H3-H7: Statistics: Interaction Terms HT with LT Regression Analysis Sales Growth (2012 & 2014)

A. DV: Sales Growth 2012 (ln)	**10K_HT & 10K_LT M1**	**10K_HT & 10K_LT M2**	**10K_HT & 10K_LT M3**	**DV: Sales Growth 2012 (ln)**	**LTS_HT & LTS_LT M1**	**LTS_HT & LTS_LT M2**	**LTS_HT & LTS_LT M3**
Control Variables 2012:				**Control Variables 2012:**			
CV: Firm Age 2012 (ln)	**-0.145****	**-0.138****	**-0.142****	CV: Firm Age 2012 (ln)	**-0.139****	**-0.146****	**-0.14****
CV: Firm Size 2012 (ln)	**-0.120***	**-0.124***	**-0.131****	CV: Firm Size 2012 (ln)	**-0.114***	**-0.111***	-0.094
Dummy Variable:				**Dummy Variable**			
Dummy Variable: HT vs LT ("0" vs "1")	-0.008	-0.016	-0.019	Dummy Variable: HT vs LT ("0" vs "1")	-0.019	-0.015	-0.018
Main Effects Variables 2012 (centred terms = dimensional mean - firm EO score):				**Main Effects Variables 2012 (centred terms = dimensional mean - firm EO score):**			
IV: X1 Autonomy (centred terms)		**-0.116***	-0.075	IV: X1 Autonomy (centred terms)		-0.059	-0.122
IV: X2 Competitive Aggressiveness (centred terms)		0.048	0.015	IV: X2 Competitive Aggressiveness (centred terms)		-0.013	0.071
IV: X3 Innovativeness (centred terms)		-0.018	-0.046	IV: X3 Innovativeness (centred terms)		0.017	0.066
IV: X4 Proactiveness (centred terms)		0.061	**0.182***	IV: X4 Proactiveness (centred terms)		-0.030	-0.032
IV: X5 Risk-Taking (centred terms)		-0.039	-0.076	IV: X5 Risk-Taking (centred terms)		0.003	0.049
Interaction Terms Variables 2012 (interaction terms = dummy variable * CT):				**Interaction Terms Variables 2012 (interaction terms = dummy variable * CT):**			
IT: X1 Autonomy (interaction terms)			-0.073	IT: X1 Autonomy (interaction terms)			0.091
IT: X2 Competitive Aggressiveness (interaction terms)			0.065	IT: X2 Competitive Aggressiveness (interaction terms)			**-0.140***
IT: X3 Innovativeness (interaction terms)			0.047	IT: X3 Innovativeness (interaction terms)			-0.034
IT: X4 Proactiveness (interaction terms)			**-0.175***	IT: X4 Proactiveness (interaction terms)			0.015
IT: X5 Risk-Taking (interaction terms)			0.047	IT: X5 Risk-Taking (interaction terms)			-0.072
R	0.203	0.254	0.283	R	0.193	0.205	0.251
R Square	0.041	0.065	0.080	R Square	0.037	0.042	0.063
Adjusted R Square	0.034	0.046	0.051	Adjusted R Square	0.029	0.020	0.028
R Square Change	0.041	0.024	0.016	R Square Change	0.037	0.005	0.021
F Change	5.924	2.062	1.371	F Change	4.659	0.335	1.595
Sig. F Change	**0.001****	0.069	0.234	Sig. F Change	**0.003****	0.892	0.161
F	5.924	3.539	2.715	F	4.659	1.940	1.817
F Sig.	**0.001****	**0.001****	**0.001****	F Sig.	**0.003****	0.053	**0.039***

B. DV: Sales Growth 2014 (ln)	10K_HT & 10K_LT M1	10K_HT & 10K_LT M2	10K_HT & 10K_LT M3
Control Variables 2014:			
CV: Firm Age 2014 (ln)	-0.089	**-0.095***	-0.092
CV: Firm Size 2014 (ln)	**-0.179****	**-0.178****	**-0.187****
Dummy Variable:			
Dummy Variable: HT vs LT (“0” vs “1”)	**0.140****	**0.140****	**0.139****
Main Effects Variables 2012 (centred terms = dimensional mean - firm EO score):			
IV: X1 Autonomy (centred terms)		0.012	0.046
IV: X2 Competitive Aggressiveness (centred terms)		-0.059	-0.091
IV: X3 Innovativeness (centred terms)		-0.020	0.011
IV: X4 Proactiveness (centred terms)		0.004	-0.019
IV: X5 Risk-Taking (centred terms)		0.071	**0.148***
Interaction Terms Variables 2012 (interaction terms = dummy variable * CT):			
IT: X1 Autonomy (interaction terms)			-0.088
IT: X2 Competitive Aggressiveness (interaction terms)			0.070
IT: X3 Innovativeness (interaction terms)			-0.043
IT: X4 Proactiveness (interaction terms)			0.029
IT: X5 Risk-Taking (interaction terms)			-0.126
R	0.264	0.279	0.309
R Square	0.070	0.078	0.095
Adjusted R Square	0.063	0.060	0.066
R Square Change	0.070	0.008	0.018
F Change	10.332	0.709	1.594
Sig. F Change	**0.000****	0.617	0.161
F	10.332	4.304	3.281
F Sig.	**0.000****	**0.000****	**0.000****

DV: Sales Growth 2014 (ln)	LTS_HT & LTS_LT M1	LTS_HT & LTS_LT M2	LTS_HT & LTS_LT M3
Control Variables 2014:			
CV: Firm Age 2014 (ln)	-0.086	-0.085	-0.083
CV: Firm Size 2014 (ln)	**-0.177****	**-0.182****	**-0.16****
Dummy Variable:			
Dummy Variable: HT vs LT (“0” vs “1”)	**0.163****	**0.167****	**0.183****
Main Effects Variables 2012 (centred terms = dimensional mean - firm EO score):			
IV: X1 Autonomy (centred terms)		-0.025	0.002
IV: X2 Competitive Aggressiveness (centred terms)		0.018	0.101
IV: X3 Innovativeness (centred terms)		-0.053	-0.015
IV: X4 Proactiveness (centred terms)		0.046	0.071
IV: X5 Risk-Taking (centred terms)		-0.015	-0.004
Interaction Terms Variables 2012 (interaction terms = dummy variable * CT):			
IT: X1 Autonomy (interaction terms)			-0.057
IT: X2 Competitive Aggressiveness (interaction terms)			**-0.133***
IT: X3 Innovativeness (interaction terms)			-0.057
IT: X4 Proactiveness (interaction terms)			-0.042
IT: X5 Risk-Taking (interaction terms)			-0.005
R	0.275	0.285	0.315
R Square	0.076	0.081	0.099
Adjusted R Square	0.068	0.060	0.066
R Square Change	0.076	0.005	0.018
F Change	9.837	0.413	1.408
Sig. F Change	**0.000****	0.840	0.221
F	9.837	3.917	2.966
F Sig.	**0.000****	**0.000****	**0.000****

Table 32: Data Analysis and Results: H3-H7: Statistics: Interaction Terms HT with LT Regression Analysis Market Share (2012)

A. DV: Market Share 2012 (ln)	**10K_HT & 10K_LT M1**	**10K_HT & 10K_LT M2**	**10K_HT & 10K_LT M3**
Control Variables 2012:			
CV: Firm Age 2012 (ln)	0.055	0.056	0.053
CV: Firm Size 2012 (ln)	**0.544****	**0.546****	**0.538****
Dummy Variable:			
Dummy Variable: HT vs LT (“0” vs “1”)	**0.111****	**0.117****	**0.114****
Main Effects Variables 2012 (centred terms = dimensional mean - firm EO score):			
IV: X1 Autonomy (centred terms)		0.006	0.056
IV: X2 Competitive Aggressiveness (centred terms)		0.031	0.085
IV: X3 Innovativeness (centred terms)		-0.033	-0.022
IV: X4 Proactiveness (centred terms)		-0.006	-0.013
IV: X5 Risk-Taking (centred terms)		-0.038	**-0.115***
Interaction Terms Variables 2012 (interaction terms = dummy variable * CT):			
IT: X1 Autonomy (interaction terms)			-0.092
IT: X2 Competitive Aggressiveness (interaction terms)			**-0.113***
IT: X3 Innovativeness (interaction terms)			-0.028
IT: X4 Proactiveness (interaction terms)			0.025
IT: X5 Risk-Taking (interaction terms)			**0.128***
R	0.561	0.564	0.579
R Square	0.315	0.318	0.335
Adjusted R Square	0.310	0.304	0.314
R Square Change	0.315	0.003	0.018
F Change	63.413	0.342	2.146
Sig. F Change	**0.000****	0.887	0.059
F	63.413	23.805	15.680
F Sig.	**0.000****	**0.000****	**0.000****

DV: Market Share 2012 (ln)	**LTS_HT & LTS_LT M1**	**LTS_HT & LTS_LT M2**	**LTS_HT & LTS_LT M3**
Control Variables 2012:			
CV: Firm Age 2012 (ln)	0.046	0.056	0.060
CV: Firm Size 2012 (ln)	**0.538****	**0.521****	**0.536****
Dummy Variable:			
Dummy Variable: HT vs LT (“0” vs “1”)	**0.125****	**0.104***	**0.118***
Main Effects Variables 2012 (centred terms = dimensional mean - firm EO score):			
IV: X1 Autonomy (centred terms)		-0.030	-0.027
IV: X2 Competitive Aggressiveness (centred terms)		**0.110***	**0.131***
IV: X3 Innovativeness (centred terms)		**0.091***	**0.209****
IV: X4 Proactiveness (centred terms)		-0.039	-0.085
IV: X5 Risk-Taking (centred terms)		-0.001	0.041
Interaction Terms Variables 2012 (interaction terms = dummy variable * CT):			
IT: X1 Autonomy (interaction terms)			-0.033
IT: X2 Competitive Aggressiveness (interaction terms)			-0.021
IT: X3 Innovativeness (interaction terms)			**-0.173****
IT: X4 Proactiveness (interaction terms)			0.051
IT: X5 Risk-Taking (interaction terms)			-0.050
R	0.556	0.574	0.591
R Square	0.309	0.330	0.350
Adjusted R Square	0.303	0.315	0.326
R Square Change	0.309	0.021	0.020
F Change	53.613	2.219	2.166
Sig. F Change	**0.000****	0.052	0.057
F	53.613	21.832	14.489
F Sig.	**0.000****	**0.000****	**0.000****

Table 33: Data Analysis and Results: H3-H7: Statistics: Interaction Terms HT with LT Regression Analysis Gross-Profit-Margin (2012 & 2014)

A. DV: Gross-Profit-Margin 2012 (untransformed)	**10K_HT & 10K_LT M1**	**10K_HT & 10K_LT M2**	**10K_HT & 10K_LT M3**
Control Variables 2012:			
CV: Firm Age 2012 (ln)	-0.047	-0.049	-0.048
CV: Firm Size 2012 (ln)	**-0.22****	**-0.21****	**-0.20****
Dummy Variable:			
Dummy Variable: HT vs LT ("0" vs "1")	**0.264****	**0.267****	**0.270****
Main Effects Variables 2012 (centred terms = dimensional mean - firm EO score):			
IV: X1 Autonomy (centred terms)		0.077	0.028
IV: X2 Competitive Aggressiveness (centred terms)		-0.039	-0.035
IV: X3 Innovativeness (centred terms)		0.080	0.082
IV: X4 Proactiveness (centred terms)		-0.061	-0.076
IV: X5 Risk-Taking (centred terms)		-0.035	-0.027
Interaction Terms Variables 2012 (interaction terms = dummy variable * CT):			
IT: X1 Autonomy (interaction terms)			0.101
IT: X2 Competitive Aggressiveness (interaction terms)			-0.006
IT: X3 Innovativeness (interaction terms)			-0.004
IT: X4 Proactiveness (interaction terms)			0.020
IT: X5 Risk-Taking (interaction terms)			-0.010
R	0.362	0.392	0.402
R Square	0.131	0.154	0.161
Adjusted R Square	0.125	0.137	0.134
R Square Change	0.131	0.023	0.008
F Change	20.812	2.175	0.756
Sig. F Change	**0.000****	0.056	0.582
F	20.812	9.275	5.981
F Sig.	**0.000****	**0.000****	**0.000****

DV: Gross-Profit-Margin 2012 (untransformed)	**LTS_HT & LTS_LT M1**	**LTS_HT & LTS_LT M2**	**LTS_HT & LTS_LT M3**
Control & Variables 2012:			
CV: Firm Age 2012 (ln)	-0.030	-0.044	-0.039
CV: Firm Size 2012 (ln)	**-0.212****	**-0.194****	**-0.190****
Dummy Variable:			
Dummy Variable: HT vs LT ("0" vs "1")	**0.246****	**0.249****	**0.250****
Main Effects Variables 2012 (centred terms = dimensional mean - firm EO score):			
IV: X1 Autonomy (centred terms)		-0.047	-0.113
IV: X2 Competitive Aggressiveness (centred terms)		-0.077	-0.055
IV: X3 Innovativeness (centred terms)		0.058	0.075
IV: X4 Proactiveness (centred terms)		-0.059	-0.013
IV: X5 Risk-Taking (centred terms)		0.037	0.079
Interaction Terms Variables 2012 (interaction terms = dummy variable * CT):			
IT: X1 Autonomy (interaction terms)			0.096
IT: X2 Competitive Aggressiveness (interaction terms)			-0.024
IT: X3 Innovativeness (interaction terms)			-0.007
IT: X4 Proactiveness (interaction terms)			-0.076
IT: X5 Risk-Taking (interaction terms)			-0.073
R	0.338	0.359	0.379
R Square	0.114	0.129	0.144
Adjusted R Square	0.107	0.109	0.112
R Square Change	0.114	0.015	0.015
F Change	15.444	1.187	1.246
Sig. F Change	**0.000****	0.315	0.287
F	15.444	6.549	4.523
F Sig.	**0.000****	**0.000****	**0.000****

B. DV: Gross-Profit-Margin 2014 (untransformed)	10K_HT & 10K_LT M1	10K_HT & 10K_LT M2	10K_HT & 10K_LT M3
Control Variables 2014:			
CV: Firm Age 2014 (ln)	-0.060	-0.060	-0.058
CV: Firm Size 2014 (ln)	**-0.20****	**-0.20****	**-0.19****
Dummy Variable:			
Dummy Variable: HT vs LT (“0” vs “1”)	**0.265****	**0.270****	**0.273****
Main Effects Variables 2012 (centred terms = dimensional mean - firm EO score):			
IV: X1 Autonomy (centred terms)		0.049	0.003
IV: X2 Competitive Aggressiveness (centred terms)		-0.032	-0.038
IV: X3 Innovativeness (centred terms)		0.072	0.077
IV: X4 Proactiveness (centred terms)		-0.077	-0.091
IV: X5 Risk-Taking (centred terms)		-0.043	-0.017
Interaction Terms Variables 2012 (interaction terms = dummy variable * CT):			
IT: X1 Autonomy (interaction terms)			0.090
IT: X2 Competitive Aggressiveness (interaction terms)			0.014
IT: X3 Innovativeness (interaction terms)			-0.008
IT: X4 Proactiveness (interaction terms)			0.017
IT: X5 Risk-Taking (interaction terms)			-0.038
R	0.354	0.381	0.390
R Square	0.125	0.145	0.152
Adjusted R Square	0.119	0.129	0.125
R Square Change	0.125	0.020	0.006
F Change	19.713	1.959	0.605
Sig. F Change	**0.000****	0.084	0.696
F	19.713	8.702	5.562
F Sig.	**0.000****	**0.000****	**0.000****

DV: Gross-Profit-Margin 2014 (untransformed)	LTS_HT & LTS_LT M1	LTS_HT & LTS_LT M2	LTS_HT & LTS_LT M3
Control Variables 2014:			
CV: Firm Age 2014 (ln)	-0.053	-0.070	-0.060
CV: Firm Size 2014 (ln)	**-0.196****	**-0.174****	**-0.170****
Dummy Variable:			
Dummy Variable: HT vs LT (“0” vs “1”)	**0.244****	**0.250****	**0.250****
Main Effects Variables 2012 (centred terms = dimensional mean - firm EO score):			
IV: X1 Autonomy (centred terms)		-0.035	-0.113
IV: X2 Competitive Aggressiveness (centred terms)		**-0.110***	-0.078
IV: X3 Innovativeness (centred terms)		0.057	0.074
IV: X4 Proactiveness (centred terms)		-0.065	-0.012
IV: X5 Risk-Taking (centred terms)		0.030	0.090
Interaction Terms Variables 2012 (interaction terms = dummy variable * CT):			
IT: X1 Autonomy (interaction terms)			0.115
IT: X2 Competitive Aggressiveness (interaction terms)			-0.038
IT: X3 Innovativeness (interaction terms)			0.001
IT: X4 Proactiveness (interaction terms)			-0.086
IT: X5 Risk-Taking (interaction terms)			-0.106
R	0.334	0.363	0.395
R Square	0.112	0.132	0.156
Adjusted R Square	0.104	0.112	0.125
R Square Change	0.112	0.020	0.024
F Change	15.090	1.652	2.026
Sig. F Change	**0.000****	0.146	0.074
F	15.090	6.742	4.989
F Sig.	**0.000****	**0.000****	**0.000****

Table 34: Data Analysis and Results: H3-H7: Statistics: Interaction Terms HT with LT Regression Analysis Return on Assets (2012 & 2014)

A. DV: Return on Assets 2012 (ln)	**10K_HT & 10K_LT M1**	**10K_HT & 10K_LT M2**	**10K_HT & 10K_LT M3**	**DV: Return on Assets 2012 (ln)**	**LTS_HT & LTS_LT M1**	**LTS_HT & LTS_LT M2**	**LTS_HT & LTS_LT M3**
Control Variables 2012:				**Control Variables 2012:**			
CV: Firm Age 2012 (ln)	0.009	0.015	0.011	CV: Firm Age 2012 (ln)	-0.003	-0.002	-0.005
CV: Firm Size 2012 (ln)	0.082	0.093	0.093	CV: Firm Size 2012 (ln)	0.073	0.043	0.053
Dummy Variable:				**Dummy Variable:**			
Dummy Variable: HT vs LT (“0” vs “1”)	0.204**	0.217**	0.217**	Dummy Variable: HT vs LT (“0” vs “1”)	0.173**	0.145**	0.155**
Main Effects Variables 2012 (centred terms = dimensional mean - firm EO score):				**Main Effects Variables 2012 (centred terms = dimensional mean - firm EO score):**			
IV: X1 Autonomy (centred terms)		0.118*	0.103	IV: X1 Autonomy (centred terms)		0.002	-0.027
IV: X2 Competitive Aggressiveness (centred terms)		0.111*	0.070	IV: X2 Competitive Aggressiveness (centred terms)		0.080	0.113
IV X3 Innovativeness (centred terms)		-0.073	-0.090	IV: X3 Innovativeness (centred terms)		0.108	0.147*
IV: X4 Proactiveness (centred terms)		-0.009	0.039	IV: X4 Proactiveness (centred terms)		-0.056	-0.043
IV: X5 Risk-Taking (centred terms)		-0.140**	-0.193**	IV: X5 Risk-Taking (centred terms)		-0.167**	-0.176**
Interaction Terms Variables 2012 (interaction terms = dummy variable * CT):				**Interaction Terms Variables 2012 (interaction terms = dummy variable * CT):**			
IT: X1 Autonomy (interaction terms)			0.046	IT: X1 Autonomy ((interaction terms)			0.035
IT: X2 Competitive Aggressiveness (interaction terms)			0.074	IT: X2 Competitive Aggressiveness (interaction terms)			-0.048
IT: X3 Innovativeness (interaction terms)			0.025	IT: X3 Innovativeness (interaction terms)			-0.060
IT: X4 Proactiveness (interaction terms)			-0.086	IT: X4 Proactiveness (interaction terms)			-0.026
IT: X5 Risk-Taking (interaction terms)			0.075	IT: X5 Risk-Taking (interaction terms)			0.032
R	0.217	0.290	0.305	R	0.185	0.285	0.295
R Square	0.047	0.084	0.093	R Square	0.034	0.081	0.087
Adjusted R Square	0.040	0.065	0.062	Adjusted R Square	0.025	0.059	0.050
R Square Change	0.047	0.037	0.009	R Square Change	0.034	0.047	0.006
F Change	6.338	3.106	0.724	F Change	3946.000	3.367	0.417
Sig. F Change	0.000**	0.009**	0.605	Sig. F Change	0.009**	0.006**	0.837
F	6.338	4383.0	2966.0	F	3.946	3636.0	2.379
F Sig.	0.000**	0.000**	0.000**	F Sig.	0.009**	0.000**	0.005**

B. DV: Return on Assets 2014 (ln)	10K_HT & 10K_LT M1	10K_HT & 10K_LT M2	10K_HT & 10K_LT M3	DV: Return on Assets 2014 (ln)	LTS_HT & LTS_LT M1	LTS_HT & LTS_LT M2	LTS_HT & LTS_LT M3
Control Variables 2014:				**Control Variables 2014:**			
CV: Firm Age 2014 (ln)	0.029	0.038	0.036	CV: Firm Age 2014 (ln)	-0.001	-0.007	-0.011
CV: Firm Size 2014 (ln)	**0.085**	**0.104***	**0.104***	CV: Firm Size 2014 (ln)	0.079	0.055	0.066
Dummy Variable:				**Dummy Variable:**			
Dummy Variable: HT vs LT ("0" vs "1")	**0.249****	**0.256****	**0.258****	Dummy Variable: HT vs LT ("0" vs "1")	**0.242****	**0.227****	**0.241****
Main Effects Variables 2012 (centred terms = dimensional mean - firm EO score):				**Main Effects Variables 2012 (centred terms = dimensional mean - firm EO score):**			
IV: X1 Autonomy (centred terms)		**0.129****	**0.120***	IV: X1 Autonomy (centred terms)		-0.036	-0.022
IV: X2 Competitive Aggressiveness (centred terms)		0.040	0.040	IV: X2 Competitive Aggressiveness (centred terms)		0.039	0.077
IV: X3 Innovativeness (centred terms)		-0.027	-0.012	IV: X3 Innovativeness (centred terms)		0.065	0.102
IV: X4 Proactiveness (centred terms)		0.068	0.074	IV: X4 Proactiveness (centred terms)		-0.055	-0.052
IV: X5 Risk-Taking (centred terms)		**-0.167****	**-0.195****	IV: X5 Risk-Taking (centred terms)		**-0.175****	**-0.194****
Interaction Terms Variables 2012 (interaction terms = dummy variable * CT):				**Interaction Terms Variables 2012 (interaction terms = dummy variable * CT):**			
IT: X1 Autonomy (interaction terms)			0.023	IT: X1 Autonomy (interaction terms)			-0.034
IT: X2 Competitive Aggressiveness (interaction terms)			-0.006	IT: X2 Competitive Aggressiveness (interaction terms)			-0.060
IT: X3 Innovativeness (interaction terms)			-0.026	IT: X3 Innovativeness (interaction terms)			-0.066
IT: X4 Proactiveness (interaction terms)			-0.010	IT: X4 Proactiveness (interaction terms)			-0.013
IT: X5 Risk-Taking (interaction terms)			0.045	IT: X5 Risk-Taking (interaction terms)			0.050
R	0.258	0.321	0.324	R	0.251	0.322	0.332
R Square	0.067	0.103	0.105	R Square	0.063	0.103	0.110
Adjusted R Square	0.060	0.085	0.076	Adjusted R Square	0.055	0.083	0.077
R Square Change	0.067	0.036	0.002	R Square Change	0.063	0.040	0.007
F Change	9.867	3.296	0.182	F Change	8.067	3.198	0.553
Sig. F Change	**0.000****	**0.006****	0.969	Sig. F Change	**0.000****	**0.008****	0.736
F	9.867	5.863	3.642	F	8.067	5.117	3.341
F Sig.	**0.000****	**0.000****	**0.000****	F Sig.	**0.000****	**0.000****	**0.000****

***. t is significant at the 0.01 level (2-tailed)*

**. t is significant at the 0.05 level (2-tailed)*

Values are displayed as Standardised Beta Coefficients.

Within the following sections, the results of the regression analyses as displayed within Table 31 to Table 34 and separated by the three models considering the performance indicators of sales growth, market share, gross-profit-margin, and return on assets as well as the sample sources of 10-K and LTS were – for the benefit of the reader – in brief presented as bullet points. A detailed summary of the results will follow along with section 5.3.3. For later analyses, the output residuals of the regression tests were saved within the data file. Residuals were normally distributed. Note that the degrees of freedom for the sets of models varied slightly because of different patterns of missing values.

5.3.2.1. Statistics: Interaction Terms Regression Analysis Model 1 (Control Variables and Dummy Variable)

This section provides an initial overview of the results of the interaction terms analyses separated by Model 1 to Model 3. Model 1 (M1) refers to the variables of firm age and size as well as the dummy variable, Model 2 (M2) to the addition of the centred dimensional terms, and Model 3 (M3) to the addition of the interaction dimensional terms of HT and LT. A detailed review of the levels of significance and their results according to the hypotheses will be presented along with the results summary of section 5.3.3.

Results (E) Targeting H3-H7: Statistics: Interaction Terms Regression Analysis Model 1 (Control and Dummy Variables)

Concerning each performance indicator, the interaction terms regression analyses revealed a statistically significant effect for the following cases of the control and dummy variables within Model 1 (the significant p level being either at the <0.01 (**) or at the <0.05 (*) value, including their beta coefficients):

- **CV: Firm Age (ln) 10-K:** SG 2012 (-0.145**)
- **CV: Firm Age (ln) LTS:** SG 2012 (-0.139**)

- **CV: Firm Size (ln) 10-K:** SG 2012 (-0.120*) & 2014 (-0.179**), MS 2012 (0.544**), GPM 2012 (-0.216**) & 2014 (-0.197**)
- **CV: Firm Size (ln) LTS:** SG 2012 (-0.114*) & 2014 (-0.177**), MS 2012 (0.538**), GPM 2012 (-0.212**) & 2014 (-0.196**)

- **Dummy Variable: HT vs LT 10-K:** SG 2014 (0.140**), MS 2012 (0.111**), GPM 2012 (0.264**) & 2014 (0.265**), ROA 2012 (0.204**) & 2014 (0.249**)
- **Dummy Variable: HT vs LT LTS:** SG 2014 (0.163**), MS 2012 (0.125**), GPM 2012 (0.246**) & 2014 (0.244**), ROA 2012 (0.173**) & 2014 (0.242**)

EO-performance effects will be further studied along with the results summary of section 5.3.3. when examining the five performance indicators individually. According to the levels of significance and beta coefficients within Model 1, it was observed that these were in the same magnitude when comparing the results of LTS to 10-K filings (refer to section 5.3.3. also) as seen for example in the significance values of firm age and SG 2012 with -.145** in 10-K and -.139** in LTS.

Moreover, for Model 1, the following r square change values per performance measure were reported (r square change values are displayed in brackets). For the initial Model 1, these values refer to the actual r square:

- **R Square Change: HT vs LT 10-K:** SG 2012 (0.041) & 2014 (0.070), MS 2012 (0.315), GPM 2012 (0.131) & 2014 (0.125), ROA 2012 (0.047) & 2014 (0.067)
- **R Square Change: HT vs LT LTS:** SG 2012 (0.037) & 2014 (0.076), MS 2012 (0.309), GPM 2012 (0.114) & 2014 (0.112), ROA 2012 (0.034) & 2014 (0.063)

5.3.2.2. Statistics: Interaction Terms Regression Analysis Model 2 (Adding Independent Variables)

<u>Results (E) Targeting H3-H7: Statistics: Interaction Terms Regression Analysis Model 2 (Adding Independent Variables)</u>

Adding the centred dimension terms of the five EO dimensions as IVs to Model 1, the analyses of Model 2 revealed the following changes of significance to the CVs (including their beta coefficients).

- **CV: Firm Age (ln) 10-K:** SG 2014 (-0.095*)
- **CV: Firm Age (ln) LTS:** no change

- **CV: Firm Size (ln) 10-K:** ROA 2014 (0.104*)
- **CV: Firm Size (ln) LTS:** no change

- **Dummy Variable: HT vs LT 10-K:** no change
- **Dummy Variable: HT vs LT LTS:** no change

Moreover, the following dimensions as IVs reached the significance p-value for the specific performance indicators at the centred terms (CT):

- **IV: X1 Autonomy (centred terms) 10-K:** SG 2012 (-0.116*), ROA 2012 (0.118*) & 2014 (0.129**)
- **IV: X1 Autonomy (centred terms) LTS:** none

- **IV: X2 Competitive Aggressiveness (centred terms) 10-K:** ROA 2012 (0.111*)
- **IV: X2 Competitive Aggressiveness (centred terms) LTS:** MS 2012 (0.110*), GPM 2014 (-0.110*)

- **IV: X3 Innovativeness (centred terms) 10-K:** none
- **IV: X3 Innovativeness (centred terms) LTS:** MS 2012 (0.091*)

- **IV: X4 Proactiveness (centred terms) 10-K:** none
- **IV: X4 Proactiveness (centred terms) LTS:** none

- **IV: X5 Risk-Taking (centred terms) 10-K:** ROA 2012 (-0.140**) & 2014 (-0.167**)
- **IV: X5 Risk-Taking (centred terms) LTS:** ROA 2012 (-0.167**) & 2014 (-0.175**)

When considering the levels of significance and beta coefficients within Model 2, it was reported that these lie predominantly within the same magnitude when comparing LTS to 10-K filings. For example, as displayed in the listing above, one of the exceptions is X3 of innovativeness where MS 2012 (0.091*) was regarded as significant within the LTS but not within the 10-K data source; the same held true for X2 of competitive aggressiveness and MS 2012 (0.110*).

Moreover, for Model 2, the following r square change values (as compared to Model 1) per performance measure were reported (r square change values are displayed in brackets):

- **R Square Change: HT vs LT 10-K:** SG 2012 (0.024) & 2014 (0.008), MS 2012 (0.003), GPM 2012 (0.023) & 2014 (0.020), ROA 2012 (0.037) & 2014 (0.036)
- **R Square Change: HT vs LT LTS:** SG 2012 (0.005) & 2014 (0.005), MS 2012 (0.021), GPM 2012 (0.015) & 2014 (0.020), ROA 2012 (0.047) & 2014 (0.040)

5.3.2.3. Statistics: Interaction Terms Regression Analysis Model 3 (Adding Interaction Terms)

<u>Results (E) Targeting H3-H7: Statistics: Interaction Terms Regression Analysis Model 3 (Adding Interaction Terms)</u>

Adding the dimensional interaction terms of the five EO dimensions as IVs to Model 2, the analyses of Model 3 revealed no changes of (additional) significance when considering the CVs.

As compared to Model 2, the tests of Model 3 had an additive impact on significance in the following instances at the centred terms (CT) of the IVs:

- **IV: X1 Autonomy (centred terms) 10-K:** no change
- **IV: X1 Autonomy (centred terms) LTS:** no change

- **IV: X2 Competitive Aggressiveness (centred terms) 10-K:** no change
- **IV: X2 Competitive Aggressiveness (centred terms) LTS:** no change

- **IV: X3 Innovativeness (centred terms) 10-K:** no change
- **IV: X3 Innovativeness (centred terms) LTS:** ROA 2012 (0.147*)

- **IV: X4 Proactiveness (centred terms) 10-K:** SG 2012 (0.182*)
- **IV: X4 Proactiveness (centred terms) LTS:** no change

- **IV: X5 Risk-Taking (centred terms) 10-K:** SG 2014 (0.148*), MS 2012 (-0.115*)
- **IV: X5 Risk-Taking (centred terms) LTS:** no change

The analyses revealed levels of significance (including their beta coefficients) for the interaction terms (here referred to as “IT”) at the following cases of Model 3:

- **IT: X1 Autonomy (interaction terms) 10-K:** none
- **IT: X1 Autonomy (interaction terms) LTS:** none

- **IT: X2 Competitive Aggressiveness (interaction terms) 10-K:** MS 2012 (-0.113*)
- **IT: X2 Competitive Aggressiveness (interaction terms) LTS:** SG 2012 (-0.140*) & 2014 (-0.133*)

- **IT: X3 Innovativeness (interaction terms) 10-K:** none
- **IT: X3 Innovativeness (interaction terms) LTS:** MS 2012 (-0.173**)

- **IT: X4 Proactiveness (interaction terms) 10-K:** SG 2012 (-0.175*)
- **IT: X4 Proactiveness (interaction terms) LTS:** none

- **IT: X5 Risk-Taking (interaction terms) 10-K:** MS 2012 (0.128*)
- **IT: X5 Risk-Taking (interaction terms) LTS:** none

When referring to the levels of significance within Model 3, it was reported that additions to this model differ when comparing LTS to 10-K filings. Examples are X5 risk-taking with MS 2012 (.128*) and X4 proactiveness with SG 2012 (-.175*) that were regarded as significant within the 10-K but not within the LTS data file. These varying levels of EO dimensional significance between the file sources are regarded as an essential contribution to firm-level EO research as these illustrate that there were different interaction effects of the HT and LT industry within both sources of 10-K and LTS files.

Moreover, for Model 3, the following r square Change values (as compared to Model 2) per performance measure were reported (r square change values are displayed in brackets):

- **R Square Change: HT vs LT 10-K:** SG 2012 (0.016) & 2014 (0.018), MS 2012 (0.018), GPM 2012 (0.008) & 2014 (0.006), ROA 2012 (0.009) & 2014 (0.002)

- **R Square Change: HT vs LT LTS:** SG 2012 (0.021) & 2014 (0.018), MS 2012 (0.020), GPM 2012 (0.015) & 2014 (0.024), ROA 2012 (0.006) & 2014 (0.007)

Values for r and r square explain the variance in the performance measures. The r values increased consistently from Model 1 over Model 2 to Model 3 as seen within Table 31 to Table 34; this explained the percentages of changes caused by the specific variables on the dependent variables (performance measures) in the full model. For example, the r square value of the EO dimensions with market share 2012 in the 10-K data file was .335 for Model 3 and shows that 33.5% of the changes in market share were explained by this regression model (similar range with 35.0% with the LTS data). A relatively smaller explanatory power was reached for ROA in Model 3 where these values were around 9% in both file sources. Considering the two file sources of LTS and 10-K, similar magnitudes in changes when comparing both were revealed. This effect, for example, was seen through an r square change in Model 3 in the 10-K data file for ROA 2012 with a value of .009 as compared to the same performance measure in LTS with a change value of .006, or SG 2012 that had in both file sources the same change value of .018.

As displayed earlier, only for specific performance measures and years, the control variables of firm age and size reached statistical significance. Such as for the 10-K data of sales growth 2012 in model 3 where a value for firm age of -.142 and for firm size of -.181 was reported. This indicates that sales growth was higher for younger and smaller firms, respectively. At no other instances, both the control variables reached the significance value for the same performance measure and year (for M3 and per data source).

For all of the main effect technology dummy codes, except for the sales growth LTS and 10-K data of 2012, a positive level of significance was reached across all three models. Such as the technology code of sales growth 2014 at M3 with .139 that indicates a significant effect that is .139 units higher for the HT firms than the LT firms (within the 10-K data).

5.3.3. H3-H7: Results Summary

Throughout the following, a summary of the results from the previous ANOVA analyses (A) and interaction terms regression analyses (E) is presented to investigate the impact of the five individual EO dimensions on the defined performance indicators as well as on the reported differences between HT and LT firms to study H3 to H7 (research question 2).

5.3.3.1. H3: Firm Innovativeness is more Strongly (Positively) Related to Business Performance in High-tech than in Less-tech Industries

Results (A) Targeting H3: ANOVA HT versus LT Group

Previous analysis (as displayed within Table 14) on the construct means, standard deviation, and correlation matrix among study variables revealed additional indications on the role of innovativeness and its relationship to overall business performance when considering both industry types. Mean values of innovativeness within the HT group were higher for both sample sources of LTS (=5.708) and 10-K (=5.390) as compared to their LT counterparts (=4.166 and =4.576). Hence, a higher level of EO was represented within HT intensive firms. Compared to other dimensions, the EO levels of innovativeness were the highest. Significant positive correlations were reported with competitive aggressiveness in the LTS HT group and with proactiveness in the LTS LT group; a significant negative correlation was reported with risk-taking within the 10-K LT sample. The results of the interaction terms regression analyses aid in verifying these effects.

Results (E) Targeting H3: Statistics: Interaction Terms Regression Analysis

Resulting from the interaction terms regression analyses (Table 31 to Table 34), when considering the specific performance measures, the impact of firm innovativeness on business performance can be described as follows.

Results (E) Interaction Terms Regression Analysis: H3a Sales Growth (2012 & 2014)

For sales growth (2012 & 2014), the regression analysis reported that innovativeness did not have a significant impact on this performance indicator within either the centred or interaction terms. Since no notably different effect of innovativeness was recorded on SG when comparing both HT and LT firms, it can be determined that this dimension impacts SG in the same way across both industry types. Thus, H3a is rejected for the performance measure of sales growth.

Results (E) Interaction Terms Regression Analysis: H3b Market Share (2012)

Considering market share (2012), the regression analysis reported a significant positive effect of innovativeness within the LTS file source at the centred terms ((.091*) within Model 2 and (.209**) within Model 3) including a negatively significant (-.173**) p-value ($p<0.01$) at the interaction terms. Hence, firstly, innovativeness has a markedly different impact on a firm's MS across both industry types and, secondly, the EO dimension of innovativeness has a stronger positive relation to business performance (here MS 2012) in HT (Model 3 with coefficient of .209**) than in LT firms (with coefficient of -.173**) within the LTS data group (calculated by simple slopes). In contrast, a more detrimental effect was reported in LT firms. Hence, H3b is partially supported for LTS 2012 and rejected for 10-K concerning the performance indicator of market share.

Results (E) Interaction Terms Regression Analysis: H3c Gross-Profit-Margin (2012 & 2014)

For gross-profit-margin (2012 & 2014), the regression analysis reported no significant levels of difference on account of innovativeness impacting this performance indicator. Hence, the EO dimension of innovativeness has similar effects on GPM when considering both HT and LT industry types. Thus, H3c is rejected for the performance indicator of gross-profit-margin.

Results (E) Interaction Terms Regression Analysis: H3d Return on Assets (2012 & 2014)

Referring to ROA (2012 & 2014) the regression analysis reported a positively significant (.147*) effect of innovativeness on this performance indicator at the centred terms of Model 3 in the LTS data file (for 2012); yet, no significant difference was observed at the interaction terms. Hence, for 2012, innovativeness had a positive effect on ROA in HT firms; however, overall, there was no significant difference in the impact of innovativeness on ROA when comparing HT to LT firms. Consequently, H3d is rejected for the performance indicator of ROA.

Ultimately, the mean value levels of firm innovativeness are conceived to be of higher value in HT than in LT firms. Even so, generally, no support was found that this dimension has a stronger positive relationship onto the individual performance measures in HT firms when compared to LT firms, except for one instance of MS 2012 in the LTS file source. Conversely, as an outcome, it can be concluded that the effects of innovativeness are similar within both industry types.

5.3.3.2. H4: Firm Risk-Taking is more Strongly (Positively) Related to Business Performance in High-tech than in Less-tech Industries

Results (A) Targeting H4: ANOVA HT versus LT Group

Previous analysis (as displayed within Table 14) on construct means, standard deviation, and correlation analysis among study variables revealed additional indications of the role of risk-taking and its relationship to business performance when considering both industry types. Mean values of risk-taking within HT were for both sample sources of LTS (=.450) and 10-K (=.441) only in one instance higher as compared to their LT counterparts (=.490 and =.378). In contrast to the other dimensions, the EO levels of risk-taking were the lowest. Significant positive correlations were reported with competitive aggressiveness and proactiveness in the 10-K HT group and with autonomy and proactiveness in the 10-K LT group; a noticeably negative correlation was reported regarding innovativeness within the 10-K LT sample. The results of the interaction terms regression analyses support in verifying these observed effects.

<u>Results (E) Targeting H4: Statistics: Interaction Terms Regression Analysis</u>

Resulting from the interaction terms regression analyses (Table 31 to Table 34), when referring to the specific performance measures, the impact of risk-taking on firm performance can be described as follows.

<u>Results (E) Interaction Terms Regression Analysis: H4a Sales Growth (2012 & 2014)</u>

For sales growth (2012 & 2014), the regression analysis reported only one instance of significant levels of risk-taking impacting this performance indicator at the centred terms of 10-K 2014 (.148*). Hence, overall (except this one instance), it can be summarised that risk-taking has the same effects on SG when comparing both industry types of HT and LT. Thus, H4a is rejected for the performance measure of sales growth.

<u>Results (E) Interaction Terms Regression Analysis: H4b Market Share (2012)</u>

Considering market share (2012), the regression analysis reported a negatively significant effect of risk-taking within the 10-K file source at the centred terms ((-.115*) within Model 3) and a positively significant effect at the interaction terms ((.128*) within Model 3). Hence, firstly, risk-taking has a markedly different impact on a firm’s MS across both industry types in the 10-K data source and, secondly, the EO dimension of risk-taking has a stronger positive relationship with business performance (here MS 2012) in LT (coefficient of .128** at Model 3) than in HT firms (coefficient of -.155*) within the 10-K file source; in fact, it has been determined to have a negative effect within the HT industry type. Therefore, H4b is rejected for the performance indicator of market share.

Results (E) Interaction Terms Regression Analysis: H4c Gross-Profit-Margin (2012 & 2014)

For gross-profit-margin (2012 & 2014), the regression analysis reported no significant levels of difference concerning the impact of risk-taking on this performance indicator. Hence, the EO dimension of risk-taking is regarded as having similar effects on GPM when considering both HT and LT industry types. Hence, H4c is rejected for the performance measure of gross-profit-margin.

Results (E) Interaction Terms Regression Analysis: H4d Return on Assets (2012 & 2014)

Referring to ROA (2012 & 2014), the regression analysis reported a strong negatively significant (**) effect of risk-taking onto this performance indicator at all centred terms of Model 2 and Model 3 (for 2012 & 2014); yet, no marked difference at the interaction terms. Hence, it can be concluded that risk-taking, firstly, has no noticeable different impact onto ROA when comparing HT to LT firms, however, secondly, it has a significantly adverse effect on the ROA performance of HT firms. Thus, H4d is rejected for the performance indicator of ROA.

Ultimately, mean value levels of firm risk-taking are conceived to be lower in HT than in LT firms; moreover, it cannot be confirmed that this dimension has a stronger positive relationship with the individual performance measures in HT firms – when compared to LT firms. Instead, it can be concluded that the effects of risk-taking are similar within both the industry types. As stated above, even one instance of HT firms was reported (for ROA) where risk-taking had a significantly adverse effect on firm performance at Model 2 and Model 3.

5.3.3.3. H5: Firm Proactiveness is more Strongly (Positively) Related to Business Performance in High-tech than in Less-tech Industries

<u>Results (A) Targeting H5: ANOVA HT versus LT Group</u>

The previous analysis, as displayed in Table 14, provided additional indications of the role of proactiveness and its relationship to business performance in both industry types. Mean values of proactiveness within HT were higher for both sample sources of LTS (=3.215) and 10-K (=.818) as compared to their LT counterparts (=2.544 and =.511). Hence, a higher level of EO was represented within HT intensive firms. Significantly positive correlations were reported with competitive aggressiveness in the LTS HT, 10-K HT, and 10-KT LT group and with innovativeness in the LTS LT group; a significantly negative correlation was not reported. The results of the interaction terms regression analyses lend support in verifying these effects.

<u>Results (E) Targeting H5: Statistics: Interaction Terms Regression Analysis</u>

Resulting from the interaction terms regression analyses (Table 31 to Table 34), when considering the specific performance measures, the impact of firm proactiveness on business performance can be described as follows.

<u>Results (E) Interaction Terms Regression Analysis: H5a Sales Growth (2012 & 2014)</u>

For sales growth (2012 & 2014), the regression analysis reported only one significant level (*) of proactiveness impacting this performance indicator within the centred and interaction terms of 10-K 2012 Model 2 and Model 3; whereas the centred terms had a positive effect (.182* within Model 3) and the interaction terms a negative impact (-.175* within Model 3). Hence, firstly, for the file source of 10-K in 2012, proactiveness has a stronger positive relation to SG in HT firms than in LT firms (support for the confirmation of H3), however, secondly, for all other instances and years, no strikingly different effects of proactiveness onto SG were observed when comparing HT to LT firms. Thus, this dimension impacts SG in the same way across both industry types. Therefore, H5a is partially supported for 10-K 2012 and rejected for the other instances of the performance indicator of sales growth.

Results (E) Interaction Terms Regression Analysis: H5b Market Share (2012)

Considering market share (2012), the regression analysis reported no significant differences regarding the impact of proactiveness on this performance measure. Hence, proactiveness has no overall different effect on MS when referring to firms being categorised in either the HT or LT industry type. Thus, H5b is rejected for the performance measure of market share.

Results (E) Interaction Terms Regression Analysis: H5c Gross-Profit-Margin (2012 & 2014)

For gross-profit-margin (2012 & 2014), the regression analysis reported no significant levels in the difference of proactiveness impacting this performance indicator. Hence, the EO dimension of proactiveness has similar effects on GPM when considering HT and LT industry types. Thus, H5c is rejected for gross-profit-margin.

Results (E) Interaction Terms Regression Analysis: H5d Return on Assets (2012 & 2014)

Referring to ROA (2012 & 2014), the regression analysis reported no significant levels of differences on this performance indicator. Hence, it can be concluded that proactiveness has a similar impact on ROA when comparing HT to LT firms. Therefore, H5d is rejected for ROA.

Ultimately, mean value levels of firm proactiveness are conceived to be higher in HT than in LT firms; however, it cannot be confirmed that this dimension has a stronger positive relationship with the individual performance measures in HT firms – when compared to LT firms. Instead, it can be determined that the effects of proactiveness are similar within both industry types.

5.3.3.4. H6: Firm Autonomy is more Strongly (Positively) Related to Business Performance in High-tech than in Less-tech Industries

Results (A) Targeting H6: ANOVA HT versus LT Group

Previous analysis as displayed within Table 14 on construct means, standard deviation, and correlation analysis among study variables reveals additional indications of the role of autonomy on its relationship to business performance when considering both industry types. Mean values of autonomy within HT firms were similar for both sample sources barring one instance. This similarity is indicated through the HT values of LTS (=.582) and 10-K (=.754) when compared to their LT counterparts (=.504 and =.846). A significantly positive correlation was reported with risk-taking in the 10-K LT group; no significant negative correlations were reported. Considering this, the results of the interaction terms regression analyses lend support in verifying these observations.

Results (E) Targeting H6: Statistics: Interaction Terms Regression Analysis

Resulting from the interaction terms regression analyses (Table 31 to Table 34), when considering the specific performance indicators, the impact of firm autonomy on business performance can be described as follows.

Results (E) Interaction Terms Regression Analysis: H6a Sales Growth (2012 & 2014)

For sales growth (2012 & 2014), the regression analysis reported only a single instance of negative significance (-.116*) at the centred terms within the 10-K file source of Model 2; this is an indicator of the negative impact of autonomy on SG in 2012. However, this behaviour did not repeat in 2014 where autonomy had an almost neutral effect on SG. Since no significantly different effects of autonomy on SG were observed, one can assume that this dimension impacts SG in the same way across both industry types of HT and LT. Thus, H6a is rejected for the performance measure of sales growth.

Results (E) Interaction Terms Regression Analysis: H6b Market Share (2012)

Considering market share (2012), the regression analysis reported no instance of significance for the EO dimension of autonomy. Hence, this dimension has similar effects on MS when comparing firms within the HT or LT industry type. Subsequently, H6b is rejected for the performance indicator of market share.

Results (E) Interaction Terms Regression Analysis: H6c Gross-Profit-Margin (2012 & 2014)

For gross-profit-margin (2012 & 2014), the regression analysis reported no significant levels in the difference of autonomy impacting this performance indicator. Hence, the EO dimension of autonomy is regarded as having similar effects on GPM when considering HT and LT industry types. Therefore, H6c is rejected for gross-profit-margin.

Results (E) Interaction Terms Regression Analysis: H6d Return on Assets (2012 & 2014)

Referring to ROA (2012 & 2014), the regression analysis reported two instances of a positively significant effect of autonomy on this performance indicator at the centred terms of Model 2 2012 (.118*) as well as the centred terms of Model 2 2014 (.129**) and Model 3 2014 (.120*) within the 10-K data; yet, no significant difference in the interaction terms was observed. Hence, for 2012 and 2014 within the 10-K file source, autonomy has a more positive effect on ROA in HT while no significant effect within LT firms, however, overall, no significant differences of the impact of autonomy on ROA at the interaction terms when comparing HT to LT firms can be reported. Thus, H6d is rejected for the performance indicator of ROA.

Ultimately, mean value levels of firm autonomy are conceived to be lower in HT than in LT firms; nevertheless, it cannot be confirmed that this dimension has a stronger positive relationship with the individual performance measures in HT firms – when compared to their LT counterparts. Instead, it can be concluded that the effects of autonomy are similar within both industry types of HT and LT

5.3.3.5. H7: Firm Competitive Aggressiveness is more Strongly (Positively) Related to Business Performance in High-tech than in Less-tech Industries

Results (A) Targeting H7: ANOVA HT versus LT Group

Previous analysis as displayed within Table 14 on construct means, standard deviation, and correlation analysis among study variables revealed additional indications of the role of competitive aggressiveness on its relationship to business performance when considering both industry types. Mean values of competitive aggressiveness within HT were higher for both sample sources of LTS (=.707) and 10-K (=.191) as compared to their LT counterparts (=.624 and =.172). Hence, a higher level of EO was represented within HT firms. Significantly positive correlations were reported with proactiveness in the LTS HT, 10-K HT, and 10-K LT group, with innovativeness in the LTS HT group, and with risk-taking in the 10-K HT group; significantly negative correlations were not reported. Furthermore, the results of the interaction terms regression analyses lend support in verifying these effects.

Results (E) Targeting H7: Statistics: Interaction Terms Regression Analysis

Resulting from the interaction terms regression analyses (Table 31 to Table 34), when considering the specific performance measures, the impact of firm competitive aggressiveness on business performance can be described as follows.

Results (E) Interaction Terms Regression Analysis: H7a Sales Growth (2012 & 2014)

For sales growth (2012 & 2014), the regression analysis reported two instances of the negative significance of competitive aggressiveness impacting this performance indicator; both at the interaction terms of LTS (2012 and 2014). Hence, it can be concluded that, firstly, (at least within the LTS data) competitive aggressiveness has a significantly different impact on SG (values of -.140* in 2012 and -.133* in 2014 at Model 3) as per which this is negative within the LT industry type. Secondly, looking at the overall picture, it cannot be fully confirmed that this dimension has a more positive effect on SG in HT than in LT firms as no levels of significance were reached at the centred terms. Hence, H7a is rejected for the performance measure of sales growth.

Results (E) Interaction Terms Regression Analysis: H7b Market Share (2012)

Considering market share (2012), the regression analysis reported a significantly positive effect of competitive aggressiveness within the LTS file source at the centred terms ((.110*) within Model 2 and (.131*) within Model 3) including a negatively significant (-.113*) p-value ($p<0.05$) at the interaction terms of 10-K. Hence, firstly, competitive aggressiveness has a significantly different impact on a firm's MS across both industry types (when considering both file sources) and, secondly, the EO dimension of competitive aggressiveness is more strongly positively related to business performance (here MS 2012 in the 10-K data) in HT than in LT firms. Therefore, H7b is partially supported for the performance indicator of market share.

Results (E) Interaction Terms Regression Analysis: H7c Gross-Profit-Margin (2012 & 2014)

For gross-profit-margin (2012 & 2014), the regression analysis revealed no significant levels in the difference of innovativeness impacting this performance indicator. Hence, the EO dimension of innovativeness has similar effects on GPM when considering HT and LT industry types. Thus, H7c is rejected for gross-profit-margin.

Results (E) Interaction Terms Regression Analysis: H7d Return on Assets (2012 & 2014)

Referring to ROA (2012 & 2014), the regression analysis reported a significantly positive (.111*) effect of competitive aggressiveness onto this performance indicator at the centred terms of Model 2 (for 2012); yet, no marked difference at the interaction terms. Hence, for 2012, innovativeness has a more positive effect on ROA in HT than in LT firms, however, overall, no significant differences of the impact of competitive aggressiveness on ROA when comparing HT to LT firms can be reported. Therefore, H7d is rejected for the performance indicator of ROA.

Ultimately, mean value levels of firm competitive aggressiveness are conceived to be higher in HT than in LT firms. Even so, barring one partially supported instance of market share (2012 in the 10-K data), it cannot be confirmed that this dimension has a generally stronger positive relationship on all individual performance measures in HT firms (when compared to LT firms).

Previous scholars have described the EO-performance relationship as being a direct and positive one (questioned by Wang, 2008). This assumption was initially contradicted along with research question 1 on the ideal profiles, based on the observation that deviation from the ideal benchmark of EO dimensions is negatively related to firm performance. To summarise the findings of the ANOVA and regression analyses, research question 2 targeted to study the relationship of the five multi-dimensions on performance under comparison of the HT and LT industry type; hence, questioned an always positive linkage in even greater detail. Consequently, it can be reported that all five dimensions of innovativeness, risk-taking, proactiveness, autonomy, and competitive aggressiveness have similar effects on the performance indicators of sales growth, market share, gross-profit-margin, and return on assets when considering the two different industry settings of high- and less-tech. In two instances, of the relationship of innovativeness (LTS 2012) and competitive aggressiveness (10-K 2012) onto market share (H3b and H7b), it was supported that these are more strongly positively related in HT than in LT firms. Hence, only selected dimensions impact specific performance indicators in the context of the industry types differently. Thus, overall, there are no indications on the different significant relationships of EO and performance as caused by the two industry types. However, ultimately, there is evidence that these relationships are not universally direct and positive. Furthermore, despite few instances of disparity, it is also observed that the ranges of results compare well between both files sources of the LTS and 10-K data.

5.4. Examining RQ3: The Relationship of the EO Dimensions with Performance Moderated by the Industry Conditions of Turbulence and Munificence

Within the following, by employing a moderating effects regression model, the impact of the defined industry conditions on the EO-performance relationship was investigated on the firm level (research question 3). Therein, H8 focuses on the positively moderating effects of industry turbulence while H9 studies the negatively moderating effects of industry munificence.

As displayed within Figure 24, RQ3 was evaluated regarding firm EO in 2012, impacting firm performance within the same year while being moderated by the industry conditions of turbulence as well as munificence, and being controlled by firm age and size in 2012. Similar to H3 to H7, performance indicators were assessed according to a firm’s sales growth, market share, and profitability (ROA and GPM). To investigate for data validity, the same tests were performed with the 2014 performance data as well. Moreover, the model was evaluated separately using the two sample sources of LTS and 10-K data to test for the generalisability of the results.

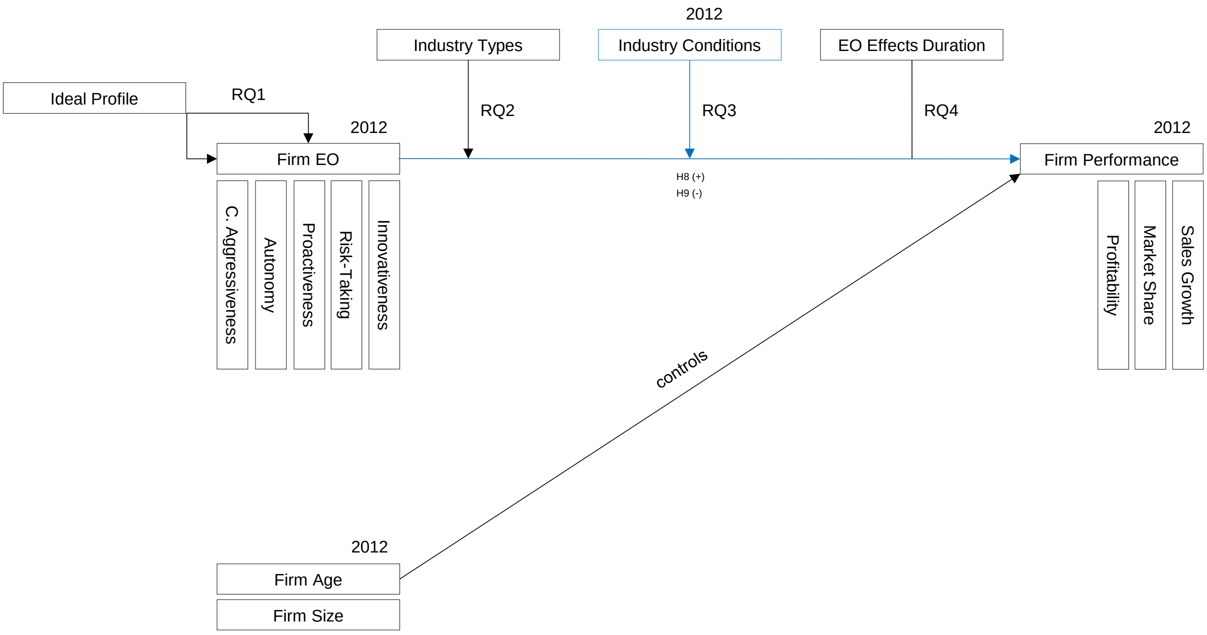


Figure 24: Data Analysis and Results: Hypotheses H8 and H9 Targeting RQ3 (data year 2012)

5.4.1. H8-H9: Initial Tests and Corrections of the Data

To ascertain for the structure and correctness of the sample regarding industry turbulence and munificence, the following initial checks and adjustments of the dataset (data corrections of moderating variables) were executed. Firstly, early descriptive statistics of the sample were studied to receive a general overview of the here relevant variables pertaining to the industry conditions (A); next, correlations by moderating and dependent variables were investigated for possible exclusion (B); this was followed by an evaluation of non-transformed versus transformed variables to perform data corrections where required (C).

5.4.1.1. Analysis and Results (A) Targeting H8-H9: Early Descriptive Statistics: General Overview of Variables

This section presents a general overview for each of the non-transformed variables of industry turbulence and munificence separated by the full datasets of the 10-K and LTS file sources on the firm level to provide a better understanding of their outline and context. The descriptive statistics for the sample sources were presented in separate sub-tables – Table 35 A. for LTS and Table 35 B. for 10-K – while the HT and LT data were combined into one sample. Yet, for later regressions, particular variables were transformed to limit possible data errors. For example, those identified through Skewness, Kurtosis, and Non-Normality tests as part of section 5.4.1.3.

Results (A) Targeting H8-H9: Early Descriptive Statistics: General Overview of Variables: Industry Turbulence and Munificence Sales Figures (2012)

With respect to the minimum and maximum values of the sales figures in 2012 (Table 35 A. for LTS and Table 35 B. for 10-K), results revealed that these are identical when referring to the two file sources of 10-K and LTS (as expected due to the same data source for these figures): while the values range from -.614 (-61%) to 1.808 (181%) for industry turbulence in terms of instability/stability, they range in the same period from -.677 (-68%) to 7.384 (738%) for industry munificence in terms of sales growth. Mean values compare well between LTS (.104 = 10%) and 10-K (.111 = 11%) for turbulence as well as munificence (.325 = 33% and .343 = 34 %). Similar results were reported for the standard deviation of .173 regarding industry turbulence and .558 for munificence in both file sources.

Results (A) Targeting H8-H9: Early Descriptive Statistics: General Overview of Variables: Industry Turbulence and Munificence Employee Figures (2012)

Referring to the minimum and maximum values of the employee numbers in 2012 (Table 35 A. for LTS and Table 35 B. for 10-K), results revealed that these are equal when considering the two file sources of 10-K and LTS: while the values range from -.794 (-79%) to .953 (95%) for industry turbulence in terms of instability/stability, they range in the same period from -.883 (88%) to 2.823 (282%) for industry munificence in terms of employee growth. Mean values compare well between LTS (.063 = 6%) and 10-K (.073 = 7%) for turbulence as well as munificence (.181 = 18% and .202 = 20%). Similar was reported for a standard deviation of .153 for turbulence and .419 for munificence (here LTS).

Table 35: Data Analysis and Results: H8-H9: Early Descriptive Statistics: General Overview of Study Variables (LTS and 10-K)

	A. LTS_HT&LT					B. 10K_HT&LT				
Variables	N	Minimum	Maximum	Mean	Std. Deviation	N	Minimum	Maximum	Mean	Std. Deviation
MV: Turbulence Sales Stability 2012 (in dec. %)	360	-0.614	1.808	0.104	0.173	415	-0.614	1.808	0.111	0.173
MV: Turbulence Employee Stability 2012 (in dec. %)	360	-0.794	0.953	0.063	0.153	415	-0.794	0.953	0.073	0.155
MV: Munificence Sales Growth 2012 (in dec. %)	360	-0.677	7.384	0.325	0.558	415	-0.677	7.384	0.343	0.557
MV: Munificence Employee Growth 2012 (in dec. %)	360	-0.883	2.823	0.181	0.419	415	-0.883	2.823	0.202	0.416

5.4.1.2. Analysis and Results (B) Targeting H8-H9: Early Descriptive Statistics: Correlations by Moderating and Dependent Variables

To test for multicollinearity within the two sample groups of 10-K and LTS, a brief correlation analysis between the moderating (industry turbulence and munificence) and dependent variables (sales growth, market share, gross-profit-margin, and return on assets) was performed. Refer to Table 36 for the 10-K data and Table 37 for the LTS data results.

Multicollinearity is regarded as a phenomenon in which two or more predictor variables in a multiple regression are highly related; hence, one can be linearly predicted from the others (Hair, Black, Babin, Anderson, & Tatham, 1998). In reference to this study's aims and later regression analyses, multicollinearity can affect the results as it causes unstable parameter estimates concerning the linkage of the independent/moderator and dependent variables (Hair, Black, Babin, Anderson, & Tatham, 1998). Since both moderator and dependent variables were sourced from similar financial data on the firm level, they were investigated for possible multicollinearity via the Pearson Correlation.

Results depict that while a majority of correlations were positive they were not statistically significant, with a few correlation coefficients even being negative (especially between performance measures). Results of both files sources compare well. In total, 13 statistically significant correlations were reported for the combined sample sources within the 10-K (Table 36) as well as the LTS data (Table 37). Critical correlations for later regression analyses were – for the benefit of the reader – highlighted by an underscore within the tables.

Since the turbulence and munificence sales figures (a four-year period) were sourced in a similar manner as the performance indicator of sales growth (a one-year period), strong positively significant correlations were expected. The results display that for all industry turbulence (sales and employee stability) as well as munificence measures (sales and employee growth) a positive statistical correlation with sales growth 2012 and 2014 was reported. For instance, this was evidenced in the correlation of turbulence sales stability with sales growth: with .636 (**) in 2012 and .212 (**) in 2014. As a consequence, it was decided to retain sales growth within the analysis, yet, to not consider this variable’s results due to the risk of multicollinearity between the moderating and dependent variables. Other critical correlations were not observed.

Table 36: Data Analysis and Results: H8-H9: Early Descriptive Statistics: Correlations by Moderating and Dependent Variables (Pearson Correlation 10-K Data)

	MV: Turbulence Sales Stability 2012 (ln)	**MV: Turbulence Employee Stability 2012 (ln)**	**MV: Munificence Sales Growth 2012 (ln)**	**MV: Munificence Employee Growth 2012 (ln)**	DV: Sales Growth 2012 (ln)	DV: Sales Growth 2014 (ln)	DV: Market Share 2012 (ln)	DV: Gross-Profit-Margin 2012 (untransformed)	DV: Gross-Profit-Margin 2014 (untransformed)	DV: Return on Assets 2012 (ln)	DV: Return on Assets 2014 (ln)
MV: Turbulence Sales Stability 2012 (ln)	1										
MV: Turbulence Employee Stability 2012 (ln)	.557**	1									
MV: Munificence Sales Growth 2012 (ln)	.799**	.542**	1								
MV: Munificence Employee Growth 2012 (ln)	.548**	.886**	.581**	1							
DV: Sales Growth 2012 (ln)	**.636****	**.479****	**.494****	**.433****	1						
DV: Sales Growth 2014 (ln)	**.212****	**.309****	**.223****	**.284****	.381**	1					
DV: Market Share 2012 (ln)	**0.002**	**-.149***	**0.039**	**-.133***	-0.105	-.229**	1				
DV: Gross-Profit-Margin 2012 (untransformed)	**0.071**	**0.053**	**0.074**	**0.078**	-0.065	0.066	-.139**	1			
DV: Gross-Profit-Margin 2014 (untransformed)	**0.089**	**0.059**	**0.097**	**0.103**	-0.045	0.084	-.157**	.951**	1		
DV: Return on Assets 2012 (ln)	**.149****	**0.070**	**.128***	**0.075**	-0.017	-0.008	.259**	.106*	0.076	1	
DV: Return on Assets 2014 (ln)	**0.071**	**0.043**	**.172****	**0.048**	-0.029	0.006	.258**	0.095	0.095	.753**	1

Table 37: Data Analysis and Results: H8-H9: Early Descriptive Statistics: Correlations by Moderating and Dependent Variables (Pearson Correlation LTS Data)

	MV: Turbulence Sales Stability 2012 (ln)	**MV: Turbulence Employee Stability 2012 (ln)**	**MV: Munificence Sales Growth 2012 (ln)**	**MV: Munificence Employee Growth 2012 (ln)**	DV: Sales Growth 2012 (ln)	DV: Sales Growth 2014 (ln)	DV: Market Share 2012 (ln)	DV: Gross-Profit-Margin 2012 (untransformed)	DV: Gross-Profit-Margin 2014 (untransformed)	DV: Return on Assets 2012 (ln)	DV: Return on Assets 2014 (ln)
MV: Turbulence Sales Stability 2012 (ln)	1										
MV: Turbulence Employee Stability 2012 (ln)	.541**	1									
MV: Munificence Sales Growth 2012 (ln)	.797**	.528**	1								
MV: Munificence Employee Growth 2012 (ln)	.541**	.890**	.567**	1							
DV: Sales Growth 2012 (ln)	**.624****	**.438****	**.496****	**.406****	1						
DV: Sales Growth 2014 (ln)	**.239****	**.346****	**.269****	**.363****	.374**	1					
DV: Market Share 2012 (ln)	**-0.029**	**-.175****	**0.020**	**-.174****	-.127*	-.248**	1				
DV: Gross-Profit-Margin 2012 (untransformed)	**0.068**	**0.029**	**0.050**	**0.037**	-0.062	0.074	-.150**	1			
DV: Gross-Profit-Margin 2014 (untransformed)	**0.094**	**0.044**	**0.081**	**0.073**	-0.034	0.089	-.172**	.945**	1		
DV: Return on Assets 2012 (ln)	**.147***	**0.067**	**.123***	**0.068**	-0.028	-0.013	.250**	0.073	0.041	1	
DV: Return on Assets 2014 (ln)	**0.082**	**0.096**	**.177****	**0.089**	-0.017	0.007	.243**	0.068	0.067	.765**	1

***. t is significant at the 0.01 level (2-tailed)*
**. t is significant at the 0.05 level (2-tailed)*

5.4.1.3. Analysis and Results (C) Targeting H8-H9: Descriptive Statistics: Non-transformed versus Transformed Variables

To examine the validity of the industry turbulence and munificence measures with RQ3 (firm sales and employee stability as well as sales and employee growth), Skewness and Kurtosis as well as Non-Normality tests were undertaken. Moreover, these investigations allowed to determine whether there were problems within the dataset that require corrective action from the researcher ("transformation"). The executed steps for Skewness and Kurtosis as well as Non-Normality tests were followed the same as described in section 5.3.1.2.

Both Skewness and Kurtosis as well as Non-Normality tests were performed on each of the two sample sources of 10-K and LTS in the combined dataset of both industry types. Refer to Table 38 for the results of the Skewness and Kurtosis tests (values displayed as a division of Skewness by Standard Error value) and Table 39 for the Non-Normality tests. As part of the early descriptive statistics for the industry measures of turbulence and munificence, these tests were accomplished for the non-transformed and transformed ("ln" transformation) moderating variables of sales and employee stability (turbulence) as well as sales and employee growth (munificence). For all variables, the values of the relevant years of 2012 were analysed. For the benefit of the reader – and for the ease of comparing values – results of both perspectives of non-transformed and transformed variables were put into a single table (Table 38 for the Skewness and Kurtosis and Table 39 for the Non-Normality tests). Refer to the following sections for the discussion on the Skewness and Kurtosis as well as Non-Normality test results.

5.4.1.3.1. Descriptive Statistics: Non-transformed Moderating Variables

Results (C) Targeting H8-H9: Descriptive Statistics: Skewness and Kurtosis Tests Non-Transformed Variables

Results of the Skewness and Kurtosis tests of the non-transformed variables (Table 38) displayed that none of the values in the sub-tables of LTS and 10-K (A. LTS_HT&LT and B. 10K_HT&LT) were within acceptable ranges. This finding was evidenced in the results for turbulence employee stability 2012, for example, which had a Skewness value of 6.1 and a Kurtosis value of 33.0 (A. LTS_HT&LT). Hence, transformed variables required consideration (Refer to the following sections). For the benefit of the reader, values closer to zero – when comparing non-transformed to transformed variables – were highlighted by an underscore within the table.

Results (C) Targeting H8-H9: Descriptive Statistics: Non-Normality Tests Non-Transformed Variables

Referring to the results of the Non-Normality tests for the non-transformed moderating variables, Table 39 displays that none of the Shapiro-Wilk Significance values was within the acceptable $p > .05$ range (sub-table A. and B.). Thus, also, in this case, the transformation of variables was considered to verify the change in the p-value.

5.4.1.3.2. Descriptive Statistics: Transformed Moderating Variables

Results (C) Targeting H8-H9: Descriptive Statistics: Skewness and Kurtosis Tests Transformed Variables

The transformed variables were tested for “ln” (“ln” transformation performed within the SPSS software). Referring to the Skewness and Kurtosis tests (Table 38), results revealed that for all turbulence and munificence sales and employee figures of 2012 the transformed values were in more acceptable ranges than their non-transformed counterparts for both file sources. For example, in the case of LTS munificence employee growth 2012, the Skewness value was

-2.9 and the Kurtosis value was .7 as opposed to its non-transformed values of 23.1 and 51.5 respectively. Moreover, when comparing both file sources, values were within the same magnitude. For example, this was noted for turbulence employee stability 2012, which had a Skewness value of -3.4 and a Kurtosis value of 1.8 in LTS as compared to -4.5 and 2.3 in 10-K.

Results (C) Targeting H8-H9: Descriptive Statistics: Non-Normality Tests Transformed Variables

Also, the results of the Non-Normality tests of the transformed variables (Table 38) displayed an (overall) improvement in p-values in single instances. For example, with regards to the variable of munificence employee growth in 2012, the p-value changed from zero to a normally distributed significance value of .101 (A. LTS_HT&LT).

Resulting from the Skewness and Kurtosis and Non-Normality tests, it was concluded to use the transformed variables ("ln") of the turbulence and munificence sales and employee figures for further analyses due to their improved ranges. Control and dependent variables were employed according to their previous categorisations as defined within section 5.3.1.2. Moreover, it was observed that the values of LTS and 10-K compare well between both file sources.

Table 38: Data Analysis and Results: H8-H9: Descriptive Statistics: Test for Skewness and Kurtosis (Moderating Variables)

	A. LTS_HT&LT				**B. 10K_HT&LT**			
	LTS_HT&LT non-transformed		**LTS_HT&LT transformed (ln)**		**10K_HT&LT non-transformed**		**10K_HT&LT transformed (ln)**	
	Skewness/Std. Error	Kurtosis/Std. Error	Skewness/Std. Error	Kurtosis/Std. Error	Skewness/Std. Error	Kurtosis/Std. Error	Skewness/Std. Error	Kurtosis/Std. Error
MV: Turbulence Sales Stability 2012								
	21.2	107.6	<u>-11.5</u>	<u>24.1</u>	20.8	100.1	<u>-12.3</u>	<u>26.8</u>
MV: Turbulence Employee Stability 2012								
	6.1	33.0	<u>-3.4</u>	<u>1.8</u>	6.6	30.4	<u>-4.5</u>	<u>2.3</u>
MV: Munificence Sales Growth 2012								
	51.5	291.1	<u>-10.6</u>	<u>16.8</u>	51.0	275.6	<u>-11.3</u>	<u>18.3</u>
MV: Munificence Employee Growth 2012								
	23.1	51.5	<u>-2.9</u>	<u>0.7</u>	22.7	48.6	<u>-3.7</u>	<u>0.8</u>

Table 39: Data Analysis and Results: H8-H9: Descriptive Statistics: Test for Non-Normality (Shapiro-Wilk Significance Moderating Variables)

	A. LTS_HT&LT		**B. 10K_HT&LT**	
	LTS_HT&LT non-transformed	**LTS_HT&LT transformed (ln)**	**10K_HT&LT non-transformed**	**10K_HT&LT transformed (ln)**
MV: Turbulence Sales Stability 2012	0.000	0.000	0.000	0.000
MV: Turbulence Employee Stability 2012	0.000	0.024	0.000	0.005
MV: Munificence Sales Growth 2012	0.000	0.000	0.000	0.000
MV: Munificence Employee Growth 2012	0.000	<u>0.101</u>	0.000	0.013

5.4.2. Analysis and Results (D) Targeting H8-H9: Statistics: Moderating Effects Regression Analysis

As the basis for further hypotheses testing of H8 and H9 (moderating effects of industry turbulence and munificence) – and for examining the relationships among the relevant variables – moderating effects analyses constructed on regression models were performed (D). Herein, industry turbulence was examined to investigate whether it positively moderates the relationship between EO and firm performance, i.e., by determining if EO will have a greater effect on firm performance when industry turbulence is high rather than low (H8) and whether industry munificence has a negatively effect on this relationship (H9). Building upon the previously studied linkage of EO to firm performance – refer to H3 through H7 – here, the EO multi-dimensions (firm innovativeness, risk-taking, proactiveness, autonomy, and competitive aggressiveness) and the performance measures (sales growth, market share, gross-profit-margin, and return on assets) were analysed individually as well.

In the course of these tests, individual regression models were performed for the four performance variables of sales growth (SG of 2012 & 2014), market share (MS of 2012), gross-profit-margin (GPM of 2012 & 2014), and return on assets (ROA of 2012 & 2014). Their results are presented on the basis of each performance indicator within Table 40 to Table 43 segmented by the sub-tables of A. and B. for 2012 and 2014 respectively. Furthermore, they have been split by the sample sources of 10-K and LTS as well as industry turbulence and munificence. Within each sub-table, reporting the results of the hypothesis testing, three regression models were completed: Model 1 for the CVs of firm age and size, Model 2 similar to Model 1 with the addition of the IVs for the EO dimensions, and Model 3 similar to Model 2 with the addition of the moderating variables of 'sales and employee stability 2012' for turbulence and 'sales and employee growth 2012' for munificence respectively. For industry turbulence and munificence, the regression models were executed separately in SPSS.

In order to prepare these analyses and receive the regression results as presented in Table 40 through Table 43 along with this study's aims, the following conditions were outlined (similar to the process as presented along with RQ2 within section 5.3.2). Firstly:

(A) Referring to the performance indicators of sales growth, market share, return on assets, and gross-profit-margin: Financial figures derived from the analysis of the first research question were employed; here, missing means were calculated, and all percentages were converted into zero to one three-digit decimal values.

(B) Referring to merging performance indicators with EO levels into one working file: Both performance indicators and EO levels for each firm were merged into four separate Microsoft Excel tables of LTS_HT (125 firms), LTS_LT (247 firms), 10K_HT (147 firms), and 10K_LT (280 firms).

(C) Referring to inactive firms within the sample: Some firms were inactive starting from 2015; hence, were excluded from further investigation of this research question. After this task, the following numbers of firms remained: LTS_HT (121 firms), LTS_LT (243 firms), 10K_HT (143 firms), and 10K_LT (275 firms).

(D) Referring to industry types (HT versus LT): As this research question targets industry conditions, the industry types of HT and LT were merged into one file that resulted in two final sample groups of LTS (364 firms) and 10-K (418 firms) for H8 and H9.

Secondly, in a next step, referring to performance indicators, non-transformed and transformed variables were employed according to their previous categorisations as resulted from the descriptive statistics of non-Normality and Skewness and Kurtosis (refer to section 5.3.1.2); for example, transformed variables of SG versus non-transformed of GPM were employed.

Lastly, in terms of moderating variables, ("ln") transformed industry conditions (refer to section 5.4.1.2) were employed as per the industry sector's growth in sales and number of employees (munificence) as well as stability/instability in sales and number of employees (turbulence) that were added to the working file for the SPSS analyses.

Table 40: Data Analysis and Results: H8-H9: Statistics: Moderator (Turbulence and Munificence) Regression Analysis Sales Growth (2012 & 2014)

	10K_HT&LT						**LTS_HT&LT**					
A. DV: Sales Growth 2012 (ln)	**Turbulence 10K_HT&LT M1**	**Turbulence 10K_HT&LT M2**	**Turbulence 10K_HT&LT M3**	**Munificence 10K_HT&LT M1**	**Munificence 10K_HT&LT M2**	**Munificence 10K_HT&LT M3**	**Turbulence LTS_HT&LT M1**	**Turbulence LTS_HT&LT M2**	**Turbulence LTS_HT&LT M3**	**Munificence LTS_HT&LT M1**	**Munificence LTS_HT&LT M2**	**Munificence LTS_HT&LT M3**
Control Variables 2012:												
CV: Firm Age 2012 (ln)	**-0.215****	**-0.196****	-0.060	**-0.227****	**-0.207****	-0.113	**-0.215****	**-0.215****	-0.073	**-0.230****	**-0.234****	-0.128
CV: Firm Size 2012 (ln)	-0.111	-0.123	-0.036	-0.118	-0.123	-0.066	-0.104	-0.113	-0.009	-0.107	-0.111	-0.044
Main Effects Variables 2012 (EO dimensions):												
IV: X1 Autonomy		**-0.186****	**-0.121***		**-0.183****	**-0.136***		-0.081	-0.027		-0.072	-0.043
IV: X2 Competitive Aggressiveness		0.110	0.057		0.118	0.097		0.071	0.056		0.050	0.048
IV: X3 Innovativeness		-0.021	-0.025		-0.003	-0.028		0.018	0.016		0.026	0.010
IV: X4 Proactiveness		**0.139***	0.073		**0.158***	0.098		-0.072	-0.039		-0.069	-0.044
IV: X5 Risk-Taking		-0.096	0.036		-0.135	-0.083		0.011	0.031		0.017	0.012
Moderating Variables Turbulence 2012:												
MV: Turbulence Sales Stability 2012 (ln)			**0.509****						**0.531****			
MV: Turbulence Employee Stability 2012 (ln)			0.105						0.080			
Moderating Variables Munificence 2012:												
MV: Munificence Sales Growth 2012 (ln)						**0.270****						**0.314****
MV: Munificence Employee Growth 2012 (ln)						**0.204****						**0.194***
R	0.263	0.400	0.658	0.277	0.426	0.576	0.259	0.285	0.620	0.274	0.294	0.520
R Square	0.069	0.160	0.433	0.077	0.181	0.331	0.067	0.081	0.384	0.075	0.086	0.271
Adjusted R Square	0.060	0.132	0.409	0.068	0.155	0.303	0.057	0.046	0.353	0.065	0.051	0.234
R Square Change	0.069	0.091	0.273	0.077	0.104	0.150	0.067	0.015	0.303	0.075	0.011	0.185
F Change	8.104	4637.000	50.955	9.195	5.513	23.989	6.663	0.572	44.059	7593.000	0.440	22.778
Sig. F Change	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****	**0.002****	0.722	**0.000****	**0.001****	0.820	**0.000****
F	8.104	5.820	17.963	9.195	6833.000	11.777	6.663	2.290	12.420	7.593	2.451	7.425
F Sig.	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****	**0.002****	**0.029***	**0.000****	**0.001****	**0.020***	**0.000****

	10K_HT&LT						**LTS_HT&LT**					
B. DV: Sales Growth 2014 (ln)	**Turbulence 10K_HT&LT M1**	**Turbulence 10K_HT&LT M2**	**Turbulence 10K_HT&LT M3**	**Munificence 10K_HT&LT M1**	**Munificence 10K_HT&LT M2**	**Munificence 10K_HT&LT M3**	**Turbulence LTS_HT&LT M1**	**Turbulence LTS_HT&LT M2**	**Turbulence LTS_HT&LT M3**	**Munificence LTS_HT&LT M1**	**Munificence LTS_HT&LT M2**	**Munificence LTS_HT&LT M3**
Control Variables 2014:												
CV: Firm Age 2014 (ln)	**-0.215****	**-0.213****	**-0.159***	**-0.171****	**-0.160***	-0.115	**-0.226****	**-0.225****	**-0.184****	**-0.174****	**-0.172***	-0.124
CV: Firm Size 2014 (ln)	**-0.280****	**-0.276****	**-0.249****	**-0.283****	**-0.276****	**-0.255****	**-0.301****	**-0.322****	**-0.286****	**-0.298****	**-0.320****	**-0.288****
Main Effects Variables 2012 (EO dimensions):												
IV: X1 Autonomy		-0.034	-0.006		-0.033	-0.009		-0.072	-0.060		-0.032	-0.044
IV: X2 Competitive Aggressiveness		-0.071	-0.086		-0.033	-0.053		0.082	0.075		0.085	0.070
IV: X3 Innovativeness		-0.032	-0.046		-0.018	-0.031		-0.102	-0.087		**-0.140***	**-0.138***
IV: X4 Proactiveness		0.034	0.042		0.077	0.072		0.099	0.100		0.122	0.126
IV: X5 Risk-Taking		0.028	0.085		0.000	0.018		-0.051	-0.048		-0.040	-0.045
Moderating Variables Turbulence 2012:												
MV: Turbulence Sales Stability 2012 (ln)			-0.033						-0.077			
MV: Turbulence Employee Stability 2012 (ln)			**0.276****						**0.291****			
Moderating Variables Munificence 2012:												
MV: Munificence Sales Growth 2012 (ln)						0.016						0.007
MV: Munificence Employee Growth 2012 (ln)						**0.203****						**0.273****
R	0.385	0.395	0.463	0.358	0.369	0.421	0.411	0.449	0.515	0.376	0.425	0.503
R Square	0.149	0.156	0.215	0.128	0.136	0.177	0.169	0.202	0.265	0.141	0.181	0.253
Adjusted R Square	0.141	0.128	0.181	0.121	0.109	0.143	0.160	0.171	0.229	0.133	0.151	0.217
R Square Change	0.149	0.008	0.059	0.128	0.008	0.041	0.169	0.033	0.063	0.141	0.039	0.072
F Change	18.836	0.385	7.790	16.621	0.392	5.445	19.243	1505.000	7.831	16.280	1.853	9.220
Sig. F Change	**0.000****	0.859	**0.001****	**0.000****	0.854	**0.005****	**0.000****	0.190	**0.001****	**0.000****	0.104	**0.000****
F	18.836	5.580	6.350	16.621	4965.000	5.227	19.243	6.646	7.293	16.280	6.075	7.177
F Sig.	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****

Table 41: Data Analysis and Results: H8-H9: Statistics: Moderator (Turbulence and Munificence) Regression Analysis Market Share (2012)

	10K_HT&LT						**LTS_HT&LT**					
A. DV: Market Share 2012 (ln)	**Turbulence 10K_HT&LT M1**	**Turbulence 10K_HT&LT M2**	**Turbulence 10K_HT&LT M3**	**Munificence 10K_HT&LT M1**	**Munificence 10K_HT&LT M2**	**Munificence 10K_HT&LT M3**	**Turbulence LTS_HT&LT M1**	**Turbulence LTS_HT&LT M2**	**Turbulence LTS_HT&LT M3**	**Munificence LTS_HT&LT M1**	**Munificence LTS_HT&LT M2**	**Munificence LTS_HT&LT M3**
Control Variables 2012:												
CV: Firm Age 2012 (ln)	**0.119***	**0.115***	0.097	**0.115***	**0.113***	**0.104***	**0.119***	**0.116***	0.103	0.108	0.105	0.095
CV: Firm Size 2012 (ln)	**0.487****	**0.479****	**0.475****	**0.513****	**0.507****	**0.512****	**0.473****	**0.478****	**0.473****	**0.506****	**0.512****	**0.518****
Main Effects Variables 2012 (EO dimensions):												
IV: X1 Autonomy		-0.073	-0.066		-0.066	-0.056		-0.037	-0.039		-0.046	-0.038
IV: X2 Competitive Aggressiveness		0.060	0.064		0.038	0.041		0.058	0.053		0.045	0.040
IV: X3 Innovativeness		-0.036	-0.038		-0.019	-0.016		0.111	0.104		**0.124***	**0.123***
IV: X4 Proactiveness		-0.020	-0.019		-0.002	-0.005		-0.101	-0.106		-0.061	-0.061
IV: X5 Risk-Taking		-0.052	-0.067		-0.024	-0.018		0.012	0.010		0.004	0.009
Moderating Variables Turbulence 2012:												
MV: Turbulence Sales Stability 2012 (ln)			**0.131***						**0.134***			
MV: Turbulence Employee Stability 2012 (ln)			**-0.162***						**-0.165***			
Moderating Variables Munificence 2012:												
MV: Munificence Sales Growth 2012 (ln)						**0.128***						0.129
MV: Munificence Employee Growth 2012 (ln)						**-0.129***						**-0.153***
R	0.527	0.540	0.558	0.551	0.558	0.570	0.512	0.534	0.553	0.540	0.560	0.575
R Square	0.278	0.292	0.311	0.304	0.312	0.325	0.262	0.285	0.306	0.292	0.313	0.331
Adjusted R Square	0.272	0.273	0.287	0.299	0.294	0.303	0.255	0.263	0.278	0.286	0.293	0.305
R Square Change	0.278	0.014	0.019	0.304	0.007	0.013	0.262	0.023	0.021	0.292	0.021	0.017
F Change	51.693	1065.000	3.658	62280.000	0.610	2.771	40.443	1.448	3.347	49.658	1.474	3.046
Sig. F Change	**0.000****	0.380	**0.027***	**0.000****	0.692	**0.064***	**0.000****	0.208	**0.037***	**0.000****	0.199	**0.049***
F	51.693	15548.000	13149.000	62280.000	18.108	14878.000	40.443	12.703	10.832	49.658	15.381	12.847
F Sig.	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****

Table 42: Data Analysis and Results: H8-H9: Statistics: Moderator (Turbulence and Munificence) Regression Analysis Gross-Profit-Margin (2012 & 2014)

	10K_HT&LT						**LTS_HT&LT**					
A. DV: Gross-Profit-Margin 2012 (untransformed)	**Turbulence 10K_HT&LT M1**	**Turbulence 10K_HT&LT M2**	**Turbulence 10K_HT&LT M3**	**Munificence 10K_HT&LT M1**	**Munificence 10K_HT&LT M2**	**Munificence 10K_HT&LT M3**	**Turbulence LTS_HT&LT M1**	**Turbulence LTS_HT&LT M2**	**Turbulence LTS_HT&LT M3**	**Munificence LTS_HT&LT M1**	**Munificence LTS_HT&LT M2**	**Munificence LTS_HT&LT M3**
Control Variables 2012:												
CV: Firm Age 2012 (ln)	**-0.126***	**-0.125***	**-0.120***	**-0.136***	**-0.134***	**-0.126***	-0.093	-0.105	-0.109	-0.101	-0.108	-0.109
CV: Firm Size 2012 (ln)	**-0.317****	**-0.306****	**-0.308****	**-0.307****	**-0.301****	**-0.305****	**-0.312****	**-0.300****	**-0.307****	**-0.305****	**-0.291****	**-0.302****
Main Effects Variables 2012 (EO dimensions):												
IV: X1 Autonomy		**0.125***	**0.117***		**0.117***	0.109		-0.015	-0.019		-0.001	-0.008
IV: X2 Competitive Aggressiveness		-0.001	0.000		0.005	0.001		-0.075	-0.071		-0.072	-0.068
IV: X3 Innovativeness		**0.133***	**0.135***		**0.132***	**0.130***		0.059	0.061		0.080	0.082
IV: X4 Proactiveness		-0.050	-0.048		-0.061	-0.059		0.021	0.024		0.011	0.010
IV: X5 Risk-Taking		-0.045	-0.042		-0.020	-0.025		-0.006	-0.008		-0.002	-0.005
Moderating Variables Turbulence 2012:												
MV: Turbulence Sales Stability 2012 (ln)			-0.079						-0.088			
MV: Turbulence Employee Stability 2012 (ln)			0.064						0.033			
Moderating Variables Munificence 2012:												
MV: Munificence Sales Growth 2012 (ln)						-0.099						-0.110
MV: Munificence Employee Growth 2012 (ln)						0.109						0.077
R	0.366	0.414	0.420	0.363	0.411	0.421	0.344	0.357	0.364	0.342	0.357	0.368
R Square	0.134	0.172	0.176	0.132	0.169	0.178	0.118	0.127	0.133	0.117	0.128	0.136
Adjusted R Square	0.127	0.150	0.148	0.126	0.148	0.151	0.111	0.100	0.098	0.110	0.102	0.103
R Square Change	0.134	0.038	0.005	0.132	0.037	0.009	0.118	0.009	0.006	0.117	0.010	0.008
F Change	20.943	2.432	0.744	21.801	2490.000	1.528	15.453	0.449	0.710	16.116	0.570	1.114
Sig. F Change	**0.000****	**0.035***	0.476	**0.000****	**0.032***	0.219	**0.000****	0.814	0.493	**0.000****	0.723	0.330
F	20.943	7.879	6.282	21.801	8.169	6.717	15.453	4.683	3.791	16.116	4.971	4.117
F Sig.	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****

	10K_HT&LT						LTS_HT&LT					
B. DV: Gross-Profit-Margin 2014 (untransformed)	**Turbulence 10K_HT&LT M1**	**Turbulence 10K_HT&LT M2**	**Turbulence 10K_HT&LT M3**	**Munificence 10K_HT&LT M1**	**Munificence 10K_HT&LT M2**	**Munificence 10K_HT&LT M3**	**Turbulence LTS_HT&LT M1**	**Turbulence LTS_HT&LT M2**	**Turbulence LTS_HT&LT M3**	**Munificence LTS_HT&LT M1**	**Munificence LTS_HT&LT M2**	**Munificence LTS_HT&LT M3**
Control Variables 2014:												
CV: Firm Age 2014 (ln)	**-0.120***	**-0.123***	-0.114	**-0.136***	**-0.136***	**-0.119***	-0.102	-0.117	-0.115	-0.113	-0.121	-0.113
CV: Firm Size 2014 (ln)	**-0.309****	**-0.303****	**-0.304****	**-0.279****	**-0.276****	**-0.279****	**-0.309****	**-0.294****	**-0.298****	**-0.281****	**-0.263****	**-0.269****
Main Effects Variables 2012 (EO dimensions):												
IV: X1 Autonomy		0.097	0.090		0.098	0.095		0.003	0.002		0.025	0.018
IV: X2 Competitive Aggressiveness		0.004	0.004		0.012	0.006		-0.111	-0.108		-0.109	-0.105
IV: X3 Innovativeness		**0.116***	**0.118***		**0.126***	**0.121***		0.062	0.065		0.092	0.092
IV: X4 Proactiveness		-0.064	-0.062		-0.070	-0.072		0.017	0.020		0.005	0.005
IV: X5 Risk-Taking		-0.052	-0.046		-0.033	-0.034		-0.031	-0.032		-0.025	-0.029
Moderating Variables Turbulence 2012:												
MV: Turbulence Sales Stability 2012 (ln)			-0.086						-0.084			
MV: Turbulence Employee Stability 2012 (ln)			0.084						0.059			
Moderating Variables Munificence 2012:												
MV: Munificence Sales Growth 2012 (ln)						-0.087						-0.090
MV: Munificence Employee Growth 2012 (ln)						**0.143***						0.118
R	0.354	0.393	0.401	0.333	0.379	0.396	0.344	0.366	0.373	0.323	0.035	0.365
R Square	0.125	0.155	0.161	0.111	0.144	0.157	0.118	0.134	0.139	0.104	0.123	0.133
Adjusted R Square	0.119	0.133	0.133	0.105	0.122	0.130	0.110	0.107	0.104	0.097	0.097	0.100
R Square Change	0.125	0.029	0.006	0.111	0.032	0.013	0.118	0.016	0.005	0.104	0.019	0.010
F Change	19.482	1858.000	0.994	18.014	2.140	2186.000	15.387	0.816	0.663	14.105	1.035	1.330
Sig. F Change	**0.000****	0.102	0.371	**0.000****	**0.061****	0.114	**0.000****	0.539	0.517	**0.000****	0.397	0.266
F	19482.000	6.981	5650.000	18014.000	6.777	5.801	15.387	4961.000	3.995	14.105	4.772	4.018
F Sig.	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****	**0.000****

Table 43: Data Analysis and Results: H8-H9: Statistics: Moderator (Turbulence and Munificence) Regression Analysis Return on Assets (2012 & 2014)

	10K_HT&LT						**LTS_HT&LT**					
A. DV: Return on Assets 2012 (ln)	**Turbulence 10K_HT&LT M1**	**Turbulence 10K_HT&LT M2**	**Turbulence 10K_HT&LT M3**	**Munificence 10K_HT&LT M1**	**Munificence 10K_HT&LT M2**	**Munificence 10K_HT&LT M3**	**Turbulence LTS_HT&LT M1**	**Turbulence LTS_HT&LT M2**	**Turbulence LTS_HT&LT M3**	**Munificence LTS_HT&LT M1**	**Munificence LTS_HT&LT M2**	**Munificence LTS_HT&LT M3**
Control Variables 2012:												
CV: Firm Age 2012 (ln)	-0.011	-0.029	-0.025	0.025	0.009	0.019	-0.015	-0.034	-0.029	0.030	0.005	0.014
CV: Firm Size 2012 (ln)	**0.127***	**0.126***	**0.139***	**0.145***	**0.142***	**0.159***	**0.134***	0.119	0.131	**0.152***	**0.141***	**0.155***
Main Effects Variables 2012 (EO dimensions):												
IV: X1 Autonomy		**0.124***	**0.148***		0.102	**0.122***		-0.035	-0.030		-0.024	-0.019
IV: X2 Competitive Aggressiveness		**0.131***	0.122		0.121	0.116		0.041	0.036		0.042	0.038
IV: X3 Innovativeness		-0.002	-0.011		0.001	-0.007		0.089	0.088		0.107	0.103
IV: X4 Proactiveness		**-0.153***	**-0.163***		-0.119	**-0.131***		-0.003	-0.007		0.005	0.005
IV: X5 Risk-Taking		-0.122	-0.111		-0.112	-0.100		**-0.210****	**-0.208****		**-0.212****	**-0.210****
Moderating Variables Turbulence 2012:												
MV: Turbulence Sales Stability 2012 (ln)			**0.145***						0.109			
MV: Turbulence Employee Stability 2012 (ln)			-0.033						-0.027			
Moderating Variables Munificence 2012:						0.129						
MV: Munificence Sales Growth 2012 (ln)						-0.011						0.101
MV: Munificence Employee Growth 2012 (ln)												-0.012
R	0.124	0.265	0.293	0.153	0.252	0.278	0.132	0.267	0.284	0.162	0.288	0.303
R Square	0.015	0.070	0.086	0.023	0.064	0.078	0.017	0.071	0.081	0.026	0.083	0.092
Adjusted R Square	0.008	0.045	0.054	0.016	0.039	0.047	0.009	0.041	0.042	0.018	0.055	0.055
R Square Change	0.015	0.055	0.015	0.023	0.040	0.014	0.017	0.054	0.009	0.026	0.057	0.009
F Change	2.062	3.030	2.160	3.287	2321.000	2022.000	1.958	2.515	1.073	3.095	2.801	1064.000
Sig. F Change	0.129	**0.011***	0.117	**0.039***	**0.044***	0.134	0.144	**0.031***	0.344	**0.047***	**0.018***	0.347
F	2.062	2.776	2.659	3287.000	2620.000	2.502	1.958	2.375	2.087	3.095	2.919	2.508
F Sig.	0.129	**0.008****	**0.006****	**0.039***	**0.012***	**0.009****	0.144	**0.023***	**0.032***	**0.047***	**0.006****	**0.009****

	10K_HT&LT						**LTS_HT&LT**					
B. DV: Return on Assets 2014 (ln)	**Turbulence 10K_HT&LT M1**	**Turbulence 10K_HT&LT M2**	**Turbulence 10K_HT&LT M3**	**Munificence 10K_HT&LT M1**	**Munificence 10K_HT&LT M2**	**Munificence 10K_HT&LT M3**	**Turbulence LTS_HT&LT M1**	**Turbulence LTS_HT&LT M2**	**Turbulence LTS_HT&LT M3**	**Munificence LTS_HT&LT M1**	**Munificence LTS_HT&LT M2**	**Munificence LTS_HT&LT M3**
Control Variables 2014:												
CV: Firm Age 2014 (ln)	0.024	0.022	0.021	0.035	0.030	0.039	-0.042	-0.068	-0.062	-0.008	-0.040	-0.025
CV: Firm Size 2014 (ln)	0.085	0.100	0.106	0.094	0.110	**0.128***	0.104	0.087	0.097	0.102	0.087	0.108
Main Effects Variables 2012 (EO dimensions):												
IV: X1 Autonomy		0.108	0.121		0.093	0.114		-0.068	-0.064		-0.062	-0.054
IV: X2 Competitive Aggressiveness		0.053	0.047		0.052	0.046		0.022	0.019		0.019	0.013
IV: X3 Innovativeness		-0.036	-0.039		-0.037	-0.040		0.077	0.078		0.073	0.071
IV: X4 Proactiveness		-0.023	-0.028		-0.019	-0.031		-0.013	-0.017		-0.014	-0.011
IV: X5 Risk-Taking		**-0.132***	**-0.129***		**-0.140***	**-0.124***		**-0.213****	**-0.212****		**-0.227****	**-0.225****
Moderating Variables Turbulence 2012:												
MV: Turbulence Sales Stability 2012 (ln)			0.096						0.082			
MV: Turbulence Employee Stability 2012 (ln)			-0.044						0.000			
Moderating Variables Munificence 2012:												
MV: Munificence Sales Growth 2012 (ln)						**0.171***						0.146
MV: Munificence Employee Growth 2012 (ln)						-0.065						-0.023
R	0.093	0.189	0.205	0.106	0.193	0.239	0.104	0.257	0.269	0.101	0.263	0.294
R Square	0.009	0.036	0.042	0.011	0.037	0.057	0.011	0.066	0.072	0.010	0.069	0.086
Adjusted R Square	0.001	0.009	0.008	0.004	0.012	0.025	0.002	0.036	0.033	0.002	0.040	0.050
R Square Change	0.009	0.027	0.006	0.011	0.026	0.020	0.011	0.055	0.006	0.010	0.059	0.017
F Change	1132.000	1428.000	0.831	1546.000	1.466	2778.000	1.204	2.543	0.737	1.180	2.863	2.116
Sig. F Change	0.324	0.214	0.437	0.215	0.201	0.064	0.302	**0.029***	0.480	0.309	**0.016***	0.123
F	1132.000	1346.000	1.230	1546.000	1.492	1793.000	1.204	2.173	1.850	1.180	2.396	2.352
F Sig.	0.324	0.229	0.277	0.215	0.170	0.070	0.302	**0.038***	0.061	0.309	**0.022***	**0.015***

***. t is significant at the 0.01 level (2-tailed)*

**. t is significant at the 0.05 level (2-tailed)*

Values are displayed as Standardised Beta Coefficients

5.4.2.1. Statistics: Moderating Effects Regression Analysis Model 1 (Control Variables)

This section provides an initial overview of the results of the moderating effects regression analyses separated by models 1 through 3. Model 1 (M1) refers to the control variables of firm age and size, Model 2 (M2) to the addition of the main effect variables (EO dimensions as independent variables) to M1, and Model 3 (M3) to the addition of the moderating variables of turbulence and munificence to M2 respectively. A detailed review of the levels of significance and their results according to the hypotheses H8 and H9 will follow along with the results summary of section 5.4.2.1.

<u>Results (D) Targeting H8: Statistics: Turbulence Moderating Effects Regression Analysis Model 1 (Control Variables)</u>

With reference to industry turbulence and each performance indicator, the moderating effects regression analyses revealed a statistical significance within Model 1 for the following instances of control variables (the significant p level being either at the <0.01 (**) or at the <0.05 (*) value, including their beta coefficients):

- **CV: Firm Age (ln) 10-K:** SG 2012 (-0.215**) & 2014 (-0.215**), MS 2012 (0.119*), GPM 2012 (-0.126*) & 2014 (-0.120*)
- **CV: Firm Age (ln) LTS:** SG 2012 (-0.215**) & 2014 (-0.226**), MS 2012 (0.119*)

- **CV: Firm Size (ln) 10-K:** SG 2014 (-0.280**), MS 2012 (0.487**), GPM 2012 (-0.317**) & 2014 (-0.309**), ROA 2012 (0.127*)
- **CV: Firm Size (ln) LTS:** SG 2014 (-0.301**), MS 2012 (0.473**), GPM 2012 (-0.312**) & 2014 (-0.309**), ROA 2012 (0.134*)

Results (D) Targeting H9: Statistics: Munificence Moderating Effects Regression Analysis Model 1 (Control Variables)

With reference to industry munificence and each performance indicator, the moderating effects regression analyses revealed that for the following instances of the control variables a statistical significance within Model 1 has been reported (the significant p level being either at the <0.01 (**) or at the <0.05 (*) value, including their beta coefficients):

- **CV: Firm Age (ln) 10-K:** SG 2012 (-0.227**) & 2014 (-0.171**), MS 2012 (0.115*), GPM 2012 (-0.136*) & 2014 (-0.136*)
- **CV: Firm Age (ln) LTS:** SG 2012 (-0.230**) & 2014 (-0.174**)

- **CV: Firm Size (ln) 10-K:** SG 2014 (-0.283**), MS 2012 (0.513**), GPM 2012 (-0.307**) & 2014 (-0.279**), ROA 2012 (0.145*)
- **CV: Firm Size (ln) LTS:** SG 2014 (-0.298**), MS 2012 (0.506**), GPM 2012 (-0.305**) & 2014 (-0.281**), ROA 2012 (0.152*)

The actual moderating effects of industry turbulence and munificence on the EO-performance relationship will be further studied along with the results summary of section 5.4.2.1. when examining the five performance indicators based on H8 and H9 individually. According to the levels of significance and beta coefficients within Model 1, it was observed that these are in the same magnitude – in many instances even identical – when comparing CV results of the LTS to the 10-K filings (refer to section 5.4.2.1. also). This finding can be noted in the significance value of turbulence firm age 2012, which is -.215** in the 10-K as well as the LTS data.

Moreover, for Model 1, the following r square change values per performance measure were reported (r square change values are displayed in brackets). For the initial Model 1, these values refer to the actual r square:

- **Turbulence R Square Change: 10-K:** SG 2012 (0.069) & 2014 (0.149), MS 2012 (0.278), GPM 2012 (0.134) & 2014 (0.125), ROA 2012 (0.015) & 2014 (0.009)
- **Turbulence R Square Change: LTS:** SG 2012 (0.067) & 2014 (0.169), MS 2012 (0.262), GPM 2012 (0.118) & 2014 (0.118), ROA 2012 (0.017) & 2014 (0.011)

- **Munificence R Square Change: 10-K:** SG 2012 (0.077) & 2014 (0.128), MS 2012 (0.304), GPM 2012 (0.132) & 2014 (0.111), ROA 2012 (0.023) & 2014 (0.011)
- **Munificence R Square Change: LTS:** SG 2012 (0.075) & 2014 (0.141), MS 2012 (0.292), GPM 2012 (0.117) & 2014 (0.104), ROA 2012 (0.026) & 2014 (0.010)

5.4.2.2. Statistics: Moderating Effects Regression Analysis Model 2 (Adding Independent Variables)

<u>Results (D) Targeting H8: Statistics: Turbulence Moderating Effects Regression Analysis Model 2 (Adding Independent Variables)</u>

Adding the five EO dimensions as independent variables to Model 1, the analyses of Model 2 revealed no changes of additional significance with respect to the control variables of turbulence (including their beta coefficients).

Moreover, for industry turbulence, the following dimensions as IVs reached the significance p-value:

- **IV: X1 Autonomy 10-K:** SG 2012 (-.186**), GPM 2012 (0.125*), ROA 2012 (0.124*)
- **IV: X1 Autonomy LTS:** none

- **IV: X2 Competitive Aggressiveness 10-K:** ROA 2012 (0.131*)
- **IV: X2 Competitive Aggressiveness LTS:** none

- **IV: X3 Innovativeness 10-K:** GPM 2012 (0.133*) & 2014 (0.116*)
- **IV: X3 Innovativeness LTS:** none

- **IV: X4 Proactiveness 10-K:** SG 2012 (0.139*), ROA 2012 (-0.153*)
- **IV: X4 Proactiveness LTS:** none

- **IV: X5 Risk-Taking 10-K:** ROA 2014 (-0.132*)
- **IV: X5 Risk-Taking LTS:** ROA 2012 (-0.210*) & 2014 (-0.132*)

Results (D) Targeting H9: Statistics: Munificence Moderating Effects Regression Analysis Model 2 (Adding Independent Variables)

Adding the five EO dimensions as independent variables to Model 1, the analyses of Model 2 revealed no changes in the levels of significance pertaining to the control variables of munificence (including their beta coefficients).

Moreover, for industry munificence, the following dimensions as IVs reached the significance p-value:

- **IV: X1 Autonomy 10-K:** SG 2012 (-183**), GPM 2012 (0.117*)
- **IV: X1 Autonomy LTS:** none

- **IV: X2 Competitive Aggressiveness 10-K:** none
- **IV: X2 Competitive Aggressiveness LTS:** none

- **IV: X3 Innovativeness 10-K:** GPM 2012 (0.132*) & 2014 (0.126*)
- **IV: X3 Innovativeness LTS:** SG 2014 (-0.140*), MS 2012 (0.124*)

- **IV: X4 Proactiveness 10-K:** SG 2012 (0.158*)
- **IV: X4 Proactiveness LTS:** none

- **IV: X5 Risk-Taking 10-K:** ROA 2014 (-0.140*)
- **IV: X5 Risk-Taking LTS:** ROA 2012 (-0.212**) & 2014 (-0.227**)

When considering the levels of significance and beta coefficients of the EO dimensions within Model 2, it was reported that these are in almost all instances within the same magnitude when comparing LTS to 10-K filings. An exception to this is, as listed above, X3 of innovativeness where MS 2012 (.124*) was regarded as significant within the LTS but not within the 10-K data source; similar results were seen for X5 of risk-taking and ROA 2014 (-.227**).

Moreover, for Model 2, the following r square change values (as compared to Model 1) per performance measure were reported (r square change values are displayed in brackets):

- **Turbulence R Square Change: 10-K:** SG 2012 (0.091) & 2014 (0.008), MS 2012 (0.014), GPM 2012 (0.038) & 2014 (0.029), ROA 2012 (0.055) & 2014 (0.027)
- **Turbulence R Square Change: LTS:** SG 2012 (0.015) & 2014 (0.033), MS 2012 (0.023), GPM 2012 (0.009) & 2014 (0.016), ROA 2012 (0.054) & 2014 (0.055)

- **Munificence R Square Change: 10-K:** SG 2012 (0.104) & 2014 (0.008), MS 2012 (0.007), GPM 2012 (0.037) & 2014 (0.032), ROA 2012 (0.040) & 2014 (0.026)
- **Munificence R Square Change: LTS:** SG 2012 (0.011) & 2014 (0.039), MS 2012 (0.021), GPM 2012 (0.010) & 2014 (0.019), ROA 2012 (0.057) & 2014 (0.059)

5.4.2.3. Statistics: Moderating Effects Regression Analysis Model 3 (Adding Moderating Variables)

Results (D) Targeting H8: Statistics: Turbulence Moderating Effects Regression Analysis Model 3 (Adding Moderating Variables)

Adding the turbulence moderating variables of sales and employee stability 2012 to Model 2 (to the relationship between the EO dimensions to the individual performance measures), the analyses of Model 3 revealed no changes of (additional) significance when considering the control variables.

As compared to Model 2, the tests for Model 3 had no additive impact on significance in any instances of the main effect variables (EO dimensions).

The regression analyses revealed a significance reach (including their beta coefficients) for the following moderating variables within Model 3 (containing the EO-performance linkage):

- **Moderating Variable: Turbulence Sales Stability 2012 10-K:** SG 2012 (0.509**), MS 2012 (0.131*), ROA 2012 (0.145*)
- **Moderating Variable: Turbulence Sales Stability 2012 LTS:** SG 2012 (0.531**), MS 2012 (0.134*)

- **Moderating Variable: Turbulence Employee Stability 2012 10-K:** SG 2014 (0.276**), MS (-0.162*)
- **Moderating Variable: Turbulence Employee Stability 2012 LTS:** SG 2014 (0.291**), MS (-0.165*)

<u>Results (D) Targeting H9: Statistics: Munificence Moderating Effects Regression Analysis Model 3 (Adding Moderating Variables)</u>

Adding the munificence moderating variables of sales and employee growth 2012 to Model 2 (pertaining to the relation of the EO dimensions to the individual performance measures), the analyses of Model 3 revealed the following changes of (additional) significance when considering the control variables.

- **CV: Firm Age (ln) 10-K:** no change
- **CV: Firm Age (ln) LTS:** no change

- **CV: Firm Size (ln) 10-K:** no change
- **CV: Firm Size (ln) LTS:** ROA 2014 (0.128*)

As compared to Model 2, the tests of Model 3 had an additional impact on significance in the following instances of the main effect variables (EO dimensions):

- **IV: X1 Autonomy 10-K:** ROA 2012 (0.122*)
- **IV: X1 Autonomy LTS:** no change

- **IV: X2 Competitive Aggressiveness 10-K:** no change
- **IV: X2 Competitive Aggressiveness LTS:** no change

- **IV: X3 Innovativeness 10-K:** no change
- **IV: X3 Innovativeness LTS:** no change

- **IV: X4 Proactiveness 10-K:** ROA 2012 (-0.131*)
- **IV: X4 Proactiveness LTS:** no change

- **IV: X5 Risk-Taking 10-K:** no change
- **IV: X5 Risk-Taking LTS:** no change

The regression analyses depicted significant results (including their beta coefficients) for the following moderating variables within Model 3 (containing the EO-performance linkage):

- **Moderating Variable: Munificence Sales Growth 2012 10-K:** SG 2012 (0.270**), MS 2012 (0.128*), ROA 2014 (0.171*)
- **Moderating Variable: Munificence Sales Growth 2012 LTS:** SG 2012 (0.314**)

- **Moderating Variable: Munificence Employee Growth 2012 10-K:** SG 2012 (0.204**) & 2014 (0.203**), MS 2012 (-0.129*), GPM 2014 (0.143*)

- **Moderating Variable: Munificence Employee Growth 2012 LTS:** SG 2012 (0.194*) & 2014 (0.273**), MS 2012 (-0.153*)

When referring to the levels of significance of the moderating variables (impact the EO-performance relationship) within Model 3, it was reported that additions to this model slightly differ when comparing LTS to 10-K filings. For munificence, on the one hand, the SG 2012 and MS 2012 values were within the same significance and magnitude, whereas on the other hand, GPM 2014 (.143*) reached the critical significance level ($p<.05$) in employee growth in the 10-K data but not within the LTS file source. As discussed along with section 5.4.1.2 on possible correlations between the moderating and dependent variables, the results of sales growth (2012 and 2014) cannot find consideration.

Moreover, for Model 3, the following r square change values (as compared to Model 2) per performance measure were reported (r square change values are displayed in brackets):

- **Turbulence R Square Change: 10-K:** SG 2012 (0.273) & 2014 (0.059), MS 2012 (0.019), GPM 2012 (0.005) & 2014 (0.006), ROA 2012 (0.015) & 2014 (0.006)
- **Turbulence R Square Change: LTS:** SG 2012 (0.303) & 2014 (0.063), MS 2012 (0.021), GPM 2012 (0.006) & 2014 (0.005), ROA 2012 (0.009) & 2014 (0.006)

- **Munificence R Square Change: 10-K:** SG 2012 (0.150) & 2014 (0.041), MS 2012 (0.013), GPM 2012 (0.009) & 2014 (0.013), ROA 2012 (0.014) & 2014 (0.020)
- **Munificence R Square Change: LTS:** SG 2012 (0.185) & 2014 (0.072), MS 2012 (0.017), GPM 2012 (0.008) & 2014 (0.010), ROA 2012 (0.009) & 2014 (0.017)

Values for r and r square explain the variance in the performance measures. For both industry turbulence and munificence, the r values increased consistently through Model 1 to Model 3 as seen within Table 40 to Table 43; hence, the percentages of changes caused by the specific variables on the dependent variables (performance measures) in the full model were explained. For example, the turbulence r square value of the EO dimensions with market share 2012 in the 10-K data file is .311 for Model 3. This value indicates that 31.1% of the changes in market share performance measures were explained by this regression model (similar range with 30.6% with the LTS data). A relatively smaller explanatory power (in terms of turbulence) was reached for ROA in Model 3 where these values were around 20% in both file sources. Considering the two file sources of LTS and 10-K, similar magnitudes in changes when comparing both were observed. This is depicted via an r square change for ROA 2012 in Model 3 within the 10-K data file that had a value of .008 as compared to the same performance measure in LTS with a change value of .006, or SG 2012 that had, in both file sources, a similar change value of ca. .300.

As displayed earlier, for specific performance measures and years, the control variables of firm age and size reached statistical significance. For example, as seen in the 10-K data of sales growth 2014 in model 3 for turbulence where a significance value for firm age of -.159 and for firm size of -.249 was reported. This indicates that sales growth, in respect to industry turbulence, was higher for younger and smaller firms, respectively. Similar ranges were observed for the LTS data source.

5.4.3. H8-H9: Results Summary

Throughout the following, a summary of the results from the previous moderating effects regression analyses (D) – separated by the four performance indicators – is presented to investigate the impact of the EO dimensions on performance moderated by industry turbulence (H8: section 5.4.3.1) and munificence (H9: section 5.4.3.2) on the S&P 500 firm level (research question 3). Here, similar to H3 to H7, performance was not regarded as an overall performance measure but by its individual indicators of sales growth (2012 & 2014), market share (2012), gross-profit-margin (2012 & 2014), and return on assets (2012 & 2014).

5.4.3.1. H8: Industry Turbulence Positively Moderates the Relationship between EO and Firm Performance such that EO will have a Greater Effect on Firm Performance when Industry Turbulence is High rather than Low

Results (D) Targeting H8: Statistics: Moderating Effects Regression Analysis

Resulting from the moderating effects regression analyses (Table 40 to Table 43), when considering the specific performance measures, the following was determined regarding the moderating effects of industry turbulence onto the relationship between firm EO and business performance. Here, only the results of Model 3 were reported (regression model including the moderating variables). The moderating variable of turbulence comprises sales and employee stability. Reported values of significance refer to their beta coefficients.

Results (D) Moderating Effects Regression Analysis: H8a Sales Growth (2012 & 2014)

As discussed along with the section 5.4.1.2 on possible correlations between the moderating and dependent variables, the results of sales growth (2012 and 2014) cannot find consideration. Thus, H8a cannot be evaluated for this performance indicator (for both turbulence measures). However, for purposes of completeness, the following can be reported: For sales growth, the regression analysis displayed a negatively significant effect of autonomy (-.121*) onto this performance indicator in the 10-K 2012 data group. All other EO dimensions were not significantly related to SG in the defined years. With respect to the moderating effects of turbulence upon the EO-performance relationship, in 2012 and 2014, mixed results were observed: While in both file sources in 2012 turbulence sales stability had a significantly positive effect onto the EO-performance relationship (.509** in 10-K and .531** in LTS) this variable had no significant impact in 2014. However, turbulence employee stability had a significantly positive effect in 2014 (.276** in 10-K and .291** in LTS).

Results (D) Moderating Effects Regression Analysis: H8b Market Share (2012)

Referring to market share, the regression analysis reported no reached levels of significance at the EO-performance relationship. In terms of the moderating effects of turbulence onto this relationship, in 2012, turbulence employee stability had a significantly negative effect (-.162* in 10-K and -165* in LTS) while turbulence sales stability had a significantly positive effect (.131* in 10-K and .134* in LTS). Hence, for employee stability, one can assume that industry turbulence negatively moderates the relationship between EO and firm market share such that EO will have a greater effect on firm market share when turbulence is low rather than high. This effect is reverse for sales stability. Thus, for the selected population, H8b is supported for the performance measure of market share (for sales stability).

Results (D) Moderating Effects Regression Analysis: H8c Gross-Profit-Margin (2012 & 2014)

For gross-profit-margin, the regression analysis reported significant positive effects of autonomy (.117* 10-K 2012) and innovativeness (.135* 10-K 2012 and .118* 10-K 2014) onto this performance indicator. All other EO dimensions were not significantly related to GPM in the defined years. Referring to the moderating effects of turbulence onto the EO-performance relationship: the results indicate that none of the moderating variables reached levels of significance (neither in the 10-K nor the LTS file sources). Hence, one can assume that industry turbulence does not positively moderate the relationship between EO and firm gross-profit-margin. Thus, H8c is rejected for the performance measure of gross-profit-margin.

Results (D) Moderating Effects Regression Analysis: H8d Return on Assets (2012 & 2014)

For return on assets, the regression analysis reported a significantly positive effect of autonomy (.149* 10-K 2012) and significant negative effects of proactiveness (-.163* 10-K 2012) and risk-taking (-.208** LTS 2012; -.212** LTS 2014; and -.129* 10-K 2014) onto this performance indicator. All other EO dimensions were not significantly related to ROA in the defined years. In terms of the moderating effects of turbulence onto the EO-performance relationship, in 2012 and 2014, mixed results were observed: Only for turbulence sales stability the significance level was reached in the 2012 10-K data (.145*); at no other instance of the turbulence moderating variables a significant effect was reported. Hence, overall, one can assume that industry turbulence does not positively moderate the relationship between EO and firm return on assets. Thus, concerning this study's population, H8d is rejected for the performance measure of return on assets.

5.4.3.2. H9: Industry Munificence Negatively Moderates the Relationship between EO and Firm Performance such that EO will have a Lower Effect on Firm Performance when Industry Munificence is High rather than Low

Results (D) Targeting H9: Statistics: Moderating Effects Regression Analysis

Resulting from the moderating effects regression analyses (Table 40 to Table 43), when considering the specific performance indicators, the following was found on the moderating effects of industry munificence onto the linkage of firm EO with business performance. Here, as for turbulence, only the results of Model 3 were reported (regression model including the moderating variables). The moderating variable of munificence comprises sales and employee growth. Reported values of significance refer to their beta coefficients.

Results (D) Moderating Effects Regression Analysis: H9a Sales Growth (2012 & 2014)

As discussed along with section 5.4.1.2 on possible correlations between the moderating and dependent variables, the results of sales growth (2012 and 2014) cannot find consideration. Thus, H9a cannot be evaluated for this performance indicator (for both turbulence measures). However, for purposes of completeness, the following can be reported: For sales growth, the regression analysis displayed a significantly negative effect of autonomy (-.136* 10-K 2012) as well as innovativeness (-.138* LTS 2014) onto this performance indicator. All other EO dimensions were not significantly related to SG in the defined time period. In terms of moderating effects onto the EO-performance relationship, in 2012 and 2014, mixed results were observed: In both file sources, in 2012 and 2014, munificence employee growth had a significantly positive effect onto the EO-performance relationship (as seen in 2014 with .203** in 10-K and .273** in LTS). However, munificence sales growth reached a significantly positive effect solely in 2012 (.270** in 10-K and .314** in LTS).

<u>Results (D) Moderating Effects Regression Analysis: H9b Market Share (2012)</u>

For market share, the regression analysis reported a single instance of reaching the level of significance at the innovativeness-performance relationship (.123* LTS 2012). Referring to the moderating effects of munificence onto this relationship, in 2012, munificence employee growth reached a negative significance level in both file sources (-.129* in 10-K and -.153* in LTS). For munificence sales growth, only in the 10-K data source, a significantly positive effect was reported (.128*). Hence, for employee growth, one can assume that industry munificence negatively moderates the relationship between EO and firm market share such that EO will have a greater effect on firm market share when munificence is high rather than low. Thus, within this population, H9b is supported for the performance measure of market share (for employee growth).

<u>Results (D) Moderating Effects Regression Analysis: H9c Gross-Profit-Margin (2012 & 2014)</u>

Referring to gross-profit-margin, the regression analysis reported a significantly positive effect of innovativeness (.130* 10-K 2012 and .121* 10-K 2014) onto this performance indicator in both years. All other EO dimensions were not significantly related to GPM in the defined period. In terms of the moderating effects of munificence onto the EO-performance relationship: For one of the moderating variables – munificence employee growth – a positively significant effect was reported (.143* 10-K 2014). However, a significance level has not reached for any other instance. Hence, one can assume that industry munificence does not negatively moderate the relationship between EO and firm gross-profit-margin. Thus, H9c is rejected for the performance measure of gross-profit-margin.

Results (D) Moderating Effects Regression Analysis: H9d Return on Assets (2012 & 2014)

For return on assets, the regression analysis reported a significantly positive effect of autonomy (.122* 10-K 2012) and significant negative effects of proactiveness (-.131* 10-K 2012) as well as risk-taking (-.210** LTS 2012; -.225** LTS 2014; and -.124* 10-K 2014) onto this performance indicator. All other EO dimensions were not significantly related to ROA in the defined years. In terms of the moderating effects of munificence onto the EO-performance relationship, in 2012 and 2014, mixed results were observed: The significance level was reached in the 10-K data in 2014 (.171*) only with regards to munificence sales growth; at no other instance of the munificence moderating variables such an effect was reported. Hence, overall, one can assume that industry munificence does not negatively moderate the relationship between EO and firm return on assets. Thus, H9d is rejected for the performance measure of return on assets.

To summarise the findings of H8 and H9, firstly, it was observed that the results of both file sources of 10-K and LTS compare well as the values were within the same magnitude in many instances. Secondly, in terms of H8, for the linkage of EO and the performance indicator of market share (H8b: for sales stability), a positive moderating effect of industry turbulence (under the conditions of this study) was supported (for H8b regarding employee stability an even negative effect was observed); however, such an effect was not confirmed for gross-profit-margin (H8c) and return on assets (H8d). Next, in terms of H9, support was found for industry munificence negatively moderating the EO-market share (H9b: for employee growth) relationship. An adverse moderating effect of munificence was rejected for gross-profit-margin (H9c), and return on assets (H9d). Lastly, due to the strong positive correlations between the moderating variables and the dependent variable of sales growth no evaluation of H8a and H9a could be performed.

5.5. Examining RQ4: The Relationship of the EO Dimensions with Performance under Temporal Considerations

There currently exist only a few studies on the multidimensional EO-performance linkage that account for temporal dimensionality. Within their conceptualisation, Lumpkin and Dess (1996) suggested that firms change, and based on that, so does the nature of their EO. Consequently, it is astonishing that this temporal aspect has received little substantive attention. Part of the reason for this is the difficulty of measuring EO and its effects over time. It has been expected that the effects of EO will last longer than its initial time or investment period; therefore, it has been hypothesised that EO set forth at one point in time may positively affect the firm's performance over a period of three years (since EO-performance outcomes are expected to require a specific time to be measurable). Hence, to investigate for temporal considerations of EO and to test for hypothesis 10 – as to which EO has a positive effect on three-year firm performance (research question 4) – multiple linear regression analyses were performed.

As displayed along with Figure 25, RQ4 was evaluated in reference to firm EO in 2012 impacting firm performance in 2013, 2014, and 2015. For purposes of data validity, and to check for year-over-year changes, the initial performance data in 2012 found consideration as well. Moreover, the model was controlled for firm age and size in 2012. Similar to the previously tested hypotheses, individual performance indicators were assessed according to a firm's sales growth, market share, and profitability (ROA and GPM). Moreover, the model was evaluated separately by using the two sample sources of LTS and 10-K data, to test for the generalisability of the results.

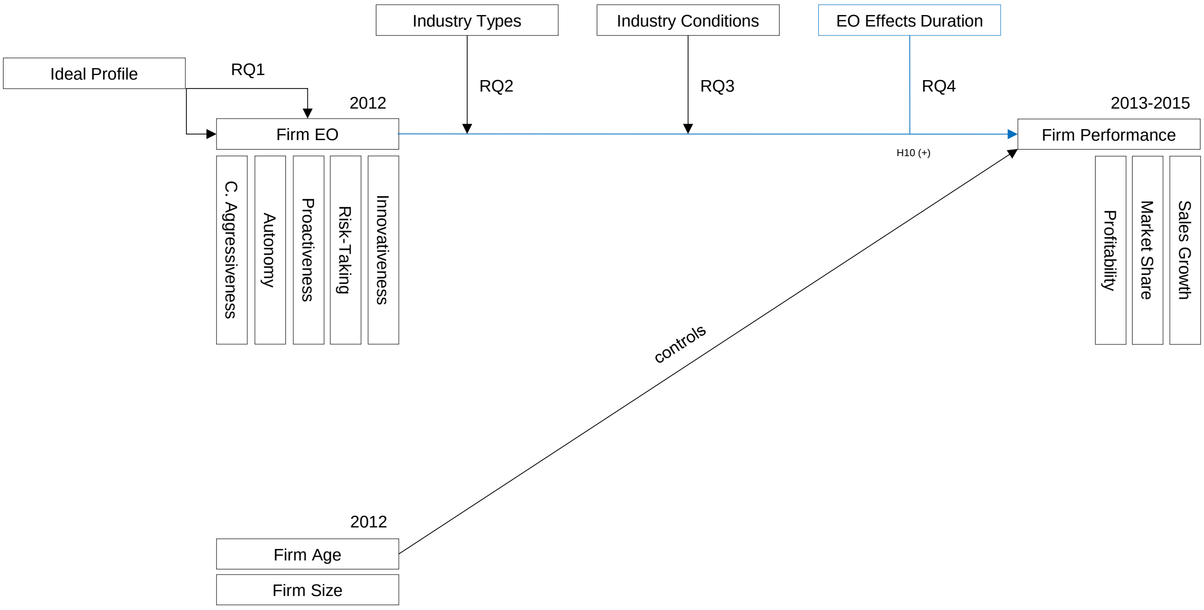


Figure 25: Data Analysis and Results: Hypotheses H10: Targeting RQ4 (data year 2013-2015)

5.5.1. H10: Initial Tests and Corrections of the Data

To check for the structure and correctness of the sample in terms of the here relevant performance measures, the following initial checks and adjustments of the dataset (data corrections of dependent variables) were completed. Firstly, early descriptive statistics of the sample were considered to receive a general overview of the new performance variables (including minimum, maximum, mean, and standard deviation) (A); followed by an evaluation of non-transformed versus transformed variables to perform data corrections where required (B).

5.5.1.1. Analysis and Results (A) Targeting H10: Early Descriptive Statistics: General Overview of Variables

This section outlines a general overview for each of the (non-transformed) dependent variables of the performance indicators (sales growth, gross-profit-margin, and return on assets) in the full dataset of the 10-K and LTS file sources to provide a better understanding of their context. The descriptive statistics for both sample sources were presented in separate sub-tables by year (2013, 2014, and 2015), Table 44 A. for the 10-K and Table 44 B. for the

LTS data, whereas HT and LT were combined into one sample. The tables represent the values of the variables when being non-transformed, yet for later regressions, particular variables (that are dependent variables) were transformed to limit possible data errors. These include variables that were identified through Skewness, Kurtosis, and Non-Normality tests as part of section 5.5.1.2.

Results (A) Targeting H10: Early Descriptive Statistics: General Overview of Variables: Sales Growth (2013 to 2015)

Considering the evolution of the minimum and maximum values of sales growth over the time period of 2013 to 2015 (Table 44 A. for 10-K and Table 44 B. for LTS), results revealed that these are identical per year when referring to the two file sources of 10-K and LTS. This is evidenced in the values ranging from -.814 (-81%) to .741 (74%) in 2013, and from -.536 (-54%) to .802 (80%) in 2015 in the 10-K and LTS data source. Mean values of sales growth compare well between the file sources of LTS (e.g. .045 = 5% in 2013) and 10-K (.049 = 5% in 2013) while they decrease over the time period of 2013 to 2015 (as evidenced by the 10-K data from .049 in 2013 to -.017 in 2015). Values obtained via standard deviation imply a greater variance as these increase over the study's time period, as seen in the 10-K data from .135 in 2013 to .159 in 2015.

Results (A) Targeting H10: Early Descriptive Statistics: General Overview of Variables: Market Share (2013 to 2015)

Market share was excluded from RQ4 as the performance figures were solely available for 2012, and not for 2013, 2014, and 2015.

Results (A) Targeting H10: Early Descriptive Statistics: General Overview of Variables: Gross-Profit-Margin (2013 to 2015)

In reference to the development of the minimum and maximum values for gross-profit-margin over the period of 2013 to 2015 (refer to Table 44 A. for the 10-K and Table 44 B. for the LTS data), results revealed that these are identical per year when considering the two file sources of 10-K and LTS: the values range from -.160 (-16%) to .981 (98%) in 2013, and from -3.643 (-364%) to .977 (98%) in 2015 for both files sources. Mean values of gross-profit-margin compare well between the file sources of LTS (e.g. .441 = 4% in 2013) and 10-K (.443 = 4% in 2013) while they decrease slightly over the time period of 2013 to 2015 (as seen in the 10-K data from .443 in 2013 to .409 in 2015). The standard deviation values imply a greater variance as these increase over the studied period, as evidenced by the 10-K data from .231 in 2013 to .359 in 2015.

Results (A) Targeting H10: Early Descriptive Statistics: General Overview of Variables: Return on Assets (2013 to 2015)

With respect to the change of the minimum and maximum values regarding return on assets over the period of 2013 to 2015 (Table 44 A. for the 10-K and Table 44 B. for the LTS data), results revealed that these are within the same magnitude when referring to the two file sources of 10-K and LTS: herein, the values range from -.099 (-10%) to .293 (29%) in 2013, and from -1.227 (-123%) to .349 (35%) in 2015 (in the 10-K data). Mean values of return on assets compare well between the file sources of LTS (e.g. .065= 7% in 2013) and 10-K (.066 = 7% in 2013) while they decrease over the period of 2013 to 2015 (as seen in the 10-K data from .066 in 2013 to .045 in 2015). Values of the standard deviation imply a greater variance as these increase over the studied time period, as seen in the 10-K data from .054 in 2013 to .117 in 2015.

Table 44: Data Analysis and Results: H10: Early Descriptive Statistics: General Overview of Study Variables (10-K and LTS)

	A. 10K_HT&LT					B. LTS_HT&LT				
Variables	N	Minimum	Maximum	Mean	Std. Deviation	N	Minimum	Maximum	Mean	Std. Deviation
DV: SG 2013 (in dec. %)	415	-0.814	0.741	0.049	0.135	360	-0.814	0.741	0.045	0.136
DV: SG 2014 (in dec. %)	415	-0.518	1.352	0.059	0.153	360	-0.518	1.352	0.064	0.156
DV: SG 2015 (in dec. %)	415	-0.536	0.802	-0.017	0.159	360	-0.536	0.802	-0.015	0.158
DV: GPM 2013 (in dec. %)	415	-0.160	0.981	0.443	0.231	360	-0.160	0.981	0.441	0.230
DV: GPM 2014 (in dec. %)	415	0.014	0.980	0.444	0.228	360	0.014	0.980	0.442	0.228
DV: GPM 2015 (in dec. %)	415	-3.643	0.977	0.409	0.359	360	-3.643	0.977	0.403	0.374
DV: ROA 2013 (in dec. %)	415	-0.099	0.293	0.066	0.054	360	-0.099	0.238	0.065	0.052
DV: ROA 2014 (in dec. %)	415	-0.243	0.349	0.068	0.058	360	-0.243	0.349	0.068	0.058
DV: ROA 2015 (in dec. %)	415	-1.227	0.349	0.045	0.117	360	-1.227	0.349	0.044	0.123

5.5.1.2. Analysis and Results (B) Targeting H10: Descriptive Statistics: Non-transformed versus Transformed Variables

To examine the validity of the performance measures with respect to RQ4 (sales growth, gross-profit-margin, and return on assets of 2013, 2014, and 2015), Skewness and Kurtosis as well as Non-Normality tests were undertaken. Furthermore, these investigations allowed the researcher to determine whether there were problems within the dataset that required corrective action (“transformation”). The executed steps for Skewness and Kurtosis as well as Non-Normality tests were followed the same as described in section 5.3.1.2.

Both Skewness and Kurtosis as well as Non-Normality tests were performed within each of the two sample sources of 10-K and LTS in the combined dataset of both industry types of HT and LT. As part of the early descriptive statistics for the performance indicators, these tests were accomplished for the non-transformed and transformed (“ln”) dependent variables of firm sales growth, gross-profit-margin, and return on assets ranging from 2013 to 2015. For the benefit of the reader – and for the ease of comparing values – results of both approaches of non-transformed and transformed variables were put into a single table: Table 45 for the Skewness and Kurtosis tests – values are displayed as the division of Skewness by Standard Error value – and Table 46 for the Non-Normality tests. Refer to the following sections on the discussion of the Skewness and Kurtosis as well as Non-Normality test results.

5.5.1.2.1. Descriptive Statistics: Non-transformed Dependent Variables

<u>Results (B) Targeting H10: Descriptive Statistics: Skewness and Kurtosis Tests Non-Transformed Variables</u>

Results of the Skewness and Kurtosis tests of the non-transformed variables (Table 45) in the sub-tables of 10-K and LTS (A. 10K_HT&LT and B. LTS_HT&LT) displayed a mixed outcome: Only the values of GPM 2013 and 2014 as well as ROA 2013 and 2014 were in acceptable ranges within both file sources as evidenced by GPM 2013 with a Skewness value of 4.0 and a Kurtosis value of -2.2 (A. 10K_HT&LT). Hence, the transformation of variables required consideration (refer to the following sections). For the benefit of the reader, values closer to zero – when comparing non-transformed to transformed variables – were highlighted by an underscore within Table 45.

Results (B) Targeting H10: Descriptive Statistics: Non-Normality Tests Non-Transformed Variables

Referring to the results of the Non-Normality tests for the non-transformed dependent variables, Table 46 displays that none of the Shapiro-Wilk Significance values was within the acceptable $p > .05$ range (for both sub-tables of A. and B.). Thus, the transformation of variables was considered to verify the manner in which the p-value would change.

5.5.1.2.2. Descriptive Statistics: Transformed Dependent Variables

Results (B) Targeting H10: Descriptive Statistics: Skewness and Kurtosis Tests Transformed Variables

The transformed variables were tested for “ln” (“ln” transformation performed within the SPSS software). Referring to the Skewness and Kurtosis tests (Table 45), results revealed that for SG 2013 to 2015, GPM 2015, and ROA 2015 the transformed values were (in both file sources) in more acceptable ranges than their non-transformed counterparts; for example, in the case of 10-K SG 2015 with a Skewness value of -4.6 and a Kurtosis value of 3.6 as compared to its non-transformed values of -1.0 and 14.9. Moreover, when comparing both file sources, values were within the same magnitude as evidenced by SG 2013 with a Skewness value of -5.4 and a Kurtosis value of 6.0 in the 10-K data as compared to -5.0 and 6.2 in the LTS data.

Results (B) Targeting H10: Descriptive Statistics: Non-Normality Tests Transformed Variables

The results of the Non-Normality tests of the transformed variables (Table 46) displayed an improvement in p-values within single instances. This observation has been evidenced through the variable of SG 2014 where the p-value changed from zero to. 025 (within the group of sub-table A. 10K_HT&LT). However, none of the values was within a normal distribution (according to the $p > .05$ range).

To summarise, based on the results derived from the Skewness and Kurtosis tests – for the following regression model – it was determined to employ the non-transformed variables for gross-profit margin and return on assets through the years of 2013 to 2015 while considering the transformed variables for sales growth due to their improved ranges (2013 to 2015). Control variables were used according to their previous categorisations as defined within section 5.3.1.2. Moreover, it was observed that LTS and 10-K values compare well between both file sources.

Table 45: Data Analysis and Results: H10: Descriptive Statistics: Test for Skewness and Kurtosis (Dependent Variables)

	A. 10K_HT&LT				**B. LTS_HT&LT**			
	10K_HT&LT non-transformed		**10K_HT&LT transformed (ln)**		**LTS_HT&LT non-transformed**		**LTS_HT&LT transformed (ln)**	
	Skewness/Std. Error	Kurtosis/Std. Error	Skewness/Std. Error	Kurtosis/Std. Error	Skewness/Std. Error	Kurtosis/Std. Error	Skewness/Std. Error	Kurtosis/Std. Error
DV: SG 2013								
	0.7	36.0	<u>-5.4</u>	<u>6.0</u>	0.2	35.0	<u>-5.0</u>	<u>6.2</u>
DV: SG 2014								
	25.5	97.6	<u>-7.7</u>	<u>14.0</u>	26.7	95.0	<u>-7.0</u>	<u>14.0</u>
DV: SG 2015								
	-1.0	14.9	<u>-4.6</u>	<u>3.6</u>	-2.3	13.0	<u>-4.5</u>	<u>3.9</u>
DV: GPM 2013								
	<u>4.0</u>	<u>-2.2</u>	-8.3	6.9	<u>4.0</u>	<u>-1.8</u>	-7.5	6.6
DV: GPM 2014								
	<u>4.5</u>	<u>-2.0</u>	-9.6	11.5	<u>4.6</u>	<u>-1.6</u>	-9.1	12.1
DV: GPM 2015								
	-42.2	208.6	<u>-11.6</u>	<u>19.6</u>	-39.9	189.1	<u>-11.2</u>	<u>19.7</u>
DV: ROA 2013								
	<u>6.8</u>	<u>4.5</u>	-9.1	6.6	<u>6.2</u>	<u>3.0</u>	-7.7	4.2
DV: ROA 2014								
	<u>4.7</u>	<u>13.7</u>	-9.7	8.2	<u>4.2</u>	<u>14.5</u>	-8.8	7.4
DV: ROA 2015								
	-45.4	199.6	<u>-5.9</u>	<u>0.6</u>	-41.7	174.4	<u>-5.2</u>	<u>0.2</u>

Table 46: Data Analysis and Results: H10: Descriptive Statistics: Test for Non-Normality (Shapiro-Wilk Significance Dependent Variables)

	A. 10K_HT&LT		**B. LTS_HT&LT**	
	10K_HT&LT non-transformed	**10K_HT&LT transformed (ln)**	**LTS_HT&LT non-transformed**	**LTS_HT&LT transformed (ln)**
DV: SG 2013	0.000	0.000	0.000	0.000
DV: SG 2014	0.000	0.025	0.000	0.043
DV: SG 2015	0.000	0.000	0.000	0.000
DV: GPM 2013	0.001	0.000	0.000	0.001
DV: GPM 2014	0.001	0.000	0.000	0.001
DV: GPM 2015	0.001	0.000	0.001	0.001
DV: ROA 2013	0.000	0.000	0.000	0.000
DV: ROA 2014	0.000	0.000	0.000	0.001
DV: ROA 2015	0.000	0.000	0.000	0.001

5.5.2. Analysis and Results (C) Targeting H10: Statistics: Temporal Considerations Regression Analysis

For further hypotheses testing of H10 – the temporal considerations of EO on firm performance – linear regression models were performed (C) over the timespan of three years (2013 to 2015). Herein, it was tested whether the effects of EO will last longer than its initial time or investment period. Therefore, it was hypothesised that EO set forth at one point in time might positively affect the firm's performance over a period of three years as EO performance outcomes are expected to require a certain time to be measurable (H10).

In the course of these assessments, individual regression models were performed, each for the three performance variables of sales growth (SG of 2013, 2014, and 2015), gross-profit-margin (GPM of 2013, 2014, and 2015), and return on assets (ROA of 2013, 2014, and 2015). As for the previous regression models, their results are presented by each performance indicator individually; refer to Table 47 to Table 49 segmented by the sub-tables of A. and B. for the sample sources of 10-K and LTS. Each sample source contains three columns for the studied years of 2013 to 2015. As EO was measured in 2012, for reasons of comparison, the performance data of 2012 was added as a fourth column to Table 47 through Table 49 as well. Each model contains the control variables of firm age and size (2012), the independent variables of the five EO dimensions (2012) as well as the corresponding performance measures (2012 to 2015).

In order to prepare these analyses and to receive the regression results as presented in Table 47 to Table 49 along with this study's aims, the following conditions were outlined (similar to the process presented along with RQ2 within section 5.3.2 and RQ3 within section 5.4.2). Firstly:

(A) Referring to the performance indicators of sales growth, return on assets, and gross-profit-margin: Financial figures were employed from the analysis of the first research question; where missing, means were calculated; all percentages were converted into zero to one three-digit decimal values.

(B) Referring to merging performance indicators with EO levels into one working file: Both performance indicators and EO levels for each firm were merged into four separate Microsoft Excel tables of LTS_HT (125 firms), LTS_LT (247 firms), 10K_HT (147 firms), and 10K_LT (280 firms).

(C) Referring to inactive firms within the sample: Some firms were inactive starting from 2015; hence, were excluded from further investigation within this research question. After this task, the following numbers of firms remained: LTS_HT (121 firms), LTS_LT (243 firms), 10K_HT (143 firms), and 10K_LT (275 firms).

(D) Referring to industry types (HT versus LT): As this research question targets temporal considerations, the industry types of HT and LT were merged into one file that resulted in two final sample groups of LTS (364 firms) and 10-K (418 firms) for H10.

Secondly, with reference the performance indicators, non-transformed and transformed variables were used according to their previous categorisations as derived from the descriptive statistics of the non-Normality and Skewness and Kurtosis tests (refer to section 5.5.1.2); this includes the transformed variables of sales growth versus the non-transformed values of gross-profit-margin and return on assets. Moreover, control variables were employed as transformed variables (refer to section 5.3.1.2).

Table 47: Data Analysis and Results: H10: Statistics: Temporal Considerations Regression Analysis Sales Growth (2012 to 2014)

	A. 10K_HT&LT				**B. LTS_HT&LT**			
DV: Sales Growth (ln)	**DV: SG 2012 (ln)**	**DV: SG 2013 (ln)**	**DV: SG 2014 (ln)**	**DV: SG 2015 (ln)**	**DV: SG 2012 (ln)**	**DV: SG 2013 (ln)**	**DV: SG 2014 (ln)**	**DV: SG 2015 (ln)**
Control Variables 2012:								
CV: Firm Age 2012 (ln)	**-0.189****	-0.055	-0.103	-0.122	**-0.202****	-0.056	-0.094	**-0.158***
CV: Firm Size 2012 (ln)	**-0.138***	**-0.328****	**-0.254****	**-0.161***	-0.128	**-0.335****	**-0.277****	-0.146
Main Effects Variables 2012 (EO dimensions):								
IV: X1 Autonomy	**-0.146***	-0.090	0.002	0.069	-0.080	-0.016	-0.017	-0.011
IV: X2 Competitive Aggressiveness	0.059	0.018	-0.069	0.064	-0.019	0.023	0.037	0.014
IV: X3 Innovativeness	-0.017	-0.010	-0.003	-0.059	-0.007	-0.031	-0.028	0.024
IV: X4 Proactiveness	0.097	0.055	0.013	-0.065	-0.054	**0.142***	0.085	-0.149
IV: X5 Risk-Taking	-0.039	0.032	0.065	-0.007	0.024	-0.105	-0.047	-0.023
R	0.328	0.356	0.309	0.252	0.268	0.375	0.312	0.295
R Square	0.108	0.127	0.095	0.064	0.072	0.140	0.097	0.087
Adjusted R Square	0.085	0.106	0.074	0.030	0.044	0.116	0.073	0.050
R Square Change	0.042	0.014	0.009	0.015	0.009	0.028	0.011	0.022
F Change	2.552	0.936	0.560	0.646	0.453	1.581	0.637	0.829
Sig. F Change	**0.028***	0.458	0.730	0.665	0.811	0.166	0.672	0.531
F	4.681	5.947	4.475	1.915	2.595	5.712	4.039	2.363
F Sig.	**0.000****	**0.000****	**0.000****	0.069	**0.013***	**0.000****	**0.000****	**0.025***

Table 48: Data Analysis and Results: H10: Statistics: Temporal Considerations Regression Analysis Gross-Profit-Margin (2012 to 2014)

	A. 10K_HT&LT				B. LTS_HT&LT			
DV: Gross-Profit-Margin (untransformed)	**DV: GPM 2012 (untransformed)**	**DV: GPM 2013 (untransformed)**	**DV: GPM 2014 (untransformed)**	**DV: GPM 2015 (untransformed)**	**DV: GPM 2012 (untransformed)**	**DV: GPM 2013 (untransformed)**	**DV: GPM 2014 (untransformed)**	**DV: GPM 2015 (untransformed)**
Control Variables 2012:								
CV: Firm Age 2012 (ln)	-0.084	-0.080	-0.078	-0.034	-0.076	-0.084	-0.080	-0.012
CV: Firm Size 2012 (ln)	**-0.219****	**-0.224****	**-0.215****	-0.036	**-0.202****	**-0.211****	**-0.192****	-0.010
Main Effects Variables 2012 (EO dimensions):								
IV: X1 Autonomy	0.062	0.057	0.043	0.057	-0.046	-0.029	-0.026	-0.013
IV: X2 Competitive A.	-0.039	-0.033	-0.030	0.048	-0.073	-0.086	**-0.106***	-0.007
IV: X3 Innovativeness	**0.104***	**0.099***	0.093	0.042	**0.111***	**0.112***	**0.105***	0.082
IV: X4 Proactiveness	-0.008	-0.015	-0.023	-0.074	-0.026	-0.011	-0.033	-0.085
IV: X5 Risk-Taking	-0.023	-0.027	-0.034	-0.017	0.025	0.003	0.014	0.036
R	0.287	0.286	0.273	0.117	0.269	0.280	0.271	0.114
R Square	0.082	0.082	0.074	0.014	0.072	0.078	0.073	0.013
Adjusted R Square	0.066	0.066	0.058	-0.003	0.054	0.060	0.055	-0.007
R Square Change	0.018	0.016	0.015	0.011	0.019	0.019	0.022	0.013
F Change	1.588	14.530	1.275	0.903	1.409	1.440	1.646	0.900
Sig. F Change	0.162	0.204	0.274	0.479	0.220	0.209	0.147	0.481
F	5.185	5.154	4.651	0.798	3.926	4.262	3.979	0.667
F Sig.	**0.000****	**0.000****	**0.000****	0.589	**0.000****	**0.000****	**0.000****	0.700

Table 49: Data Analysis and Results: H10: Statistics: Temporal Considerations Regression Analysis Return on Assets (2012 to 2014)

	A. 10K_HT&LT				**B. LTS_HT&LT**			
DV: Return on Assets (untransformed)	**DV: ROA 2012 (untransformed)**	**DV: ROA 2013 (untransformed)**	**DV: ROA 2014 (untransformed)**	**DV: ROA 2015 (untransformed)**	**DV: ROA 2012 (untransformed)**	**DV: ROA 2013 (untransformed)**	**DV: ROA 2014 (untransformed)**	**DV: ROA 2015 (untransformed)**
Control Variables 2012:								
CV: Firm Age 2012 (ln)	0.005	0.009	0.012	-0.011	0.012	0.018	-0.001	0.006
CV: Firm Size 2012 (ln)	0.071	**0.099***	0.059	**0.179****	0.039	0.071	0.026	**0.175****
Main Effects Variables 2012 (EO dimensions):								
IV: X1 Autonomy	0.073	**0.100***	0.094	0.089	-0.035	0.003	-0.025	0.003
IV: X2 Competitive Aggressiveness	0.100	0.060	0.046	0.079	0.082	0.057	0.048	0.059
IV: X3 Innovativeness	-0.034	-0.003	-0.003	-0.035	-0.014	0.062	0.039	0.010
IV: X4 Proactiveness	-0.044	-0.028	-0.008	-0.082	-0.055	-0.031	-0.010	-0.079
IV: X5 Risk-Taking	**-0.117***	**-0.123***	**-0.105***	-0.029	-0.102	**-0.121***	**-0.105***	-0.047
R	0.171	0.180	0.141	0.225	0.158	0.178	0.131	0.214
R Square	0.029	0.032	0.020	0.051	0.025	0.032	0.017	0.046
Adjusted R Square	0.013	0.016	0.003	0.034	0.005	0.012	-0.002	0.027
R Square Change	0.025	0.024	0.017	0.019	0.021	0.022	0.015	0.011
F Change	2.069	1.996	1.430	1.591	1.523	1.608	1.094	0.816
Sig. F Change	0.068	0.078	0.212	0.161	0.182	0.157	0.363	0.539
F	1.746	1.929	1.178	3.095	1.282	1.639	0.883	2.412
F Sig.	0.097	0.064	0.314	**0.003****	0.258	0.123	0.520	**0.020***

***. t is significant at the 0.01 level (2-tailed)*

**. t is significant at the 0.05 level (2-tailed)*

Values are displayed as Standardised Beta Coefficients

5.5.3. H10: Results Summary

Throughout the following, a summary of the results from the previous temporal considerations regression analyses (C) is presented to investigate whether EO has a positive effect on three-year firm performance (research question 4 - H10: section 5.5.3.1). Here, much akin to H3 through H9, performance was not regarded as an overall measure but by its individual indicators of sales growth (2013 to 2015), market share, gross-profit-margin (2013 to 2015), and return on assets (2013 to 2015). The year 2012 was added to the regression model to investigate whether significant effects on performance were reported in the initiation year of EO as well.

5.5.3.1. H10: EO has a Positive Effect on 3-year Firm Performance

Results (C) Targeting H10: Statistics: Temporal Considerations Regression Analysis

Resulting from the regression analyses (Table 47 to Table 49), when considering the specific performance measures, the following was found on temporal considerations regarding the relationship between EO and business performance. Results of the combined regression model derived from control and independent variables were reported. Presented values of significance refer to their beta coefficients.

Results (C) Temporal Considerations Regression Analysis: H10a Sales Growth (2013 to 2015)

With reference to the EO dimensions' impact onto the performance measure of sales growth (2012 to 2015), the regression analyses revealed that for the following instances of the control variables a statistical significance in the 10-K and LTS data groups can be reported (the significant p level being either at the <0.01 (**) or at the <0.05 (*) value, including their beta coefficients):

- **CV: Firm Age (ln) 10-K:** SG 2012 (-0.189**)
- **CV: Firm Age (ln) LTS:** SG 2012 (-0.202**), SG 2015 (-0.158*)

- **CV: Firm Size (ln) 10-K:** SG 2012 (-0.138*), SG 2013 (-0.328**), SG 2014 (-0.254**), SG 2015 (-0.161*)
- **CV: Firm Size (ln) LTS:** SG 2013 (-0.335**), SG 2014 (-0.277**)

Moreover, for sales growth, the following dimensions (as independent variables) reached the significance p-value within the LTS and 10-K sample groups:

- **IV: X1 Autonomy 10-K:** SG 2012 (-0.146*)
- **IV: X1 Autonomy LTS:** none

- **IV: X2 Competitive Aggressiveness 10-K:** none
- **IV: X2 Competitive Aggressiveness LTS:** none

- **IV: X3 Innovativeness 10-K:** none
- **IV: X3 Innovativeness LTS:** none

- **IV: X4 Proactiveness 10-K:** none
- **IV: X4 Proactiveness LTS:** SG 2013 (0.142*)

- **IV: X5 Risk-Taking 10-K:** none
- **IV: X5 Risk-Taking LTS:** none

As presented in the listing above, for sales growth, the regression analyses reported two instances of significance for the study period of 2013 to 2015 (inclusive 2012) within the mode. This fact was seen, firstly, within the 10-K data group, when a negatively significant effect of autonomy onto SG 2012 (-.146*) and, secondly, within the LTS group, a positively significant effect of proactiveness on SG 2013 (.142*) was reported. All other EO dimensions were not significantly related to sales growth in the defined period (neither within the 10-K nor the LTS file sources). Thus, with respect to H10, one can assume that for the performance indicator of sales growth, none of the EO dimensions has a significant positive effect on three-year firm performance (2013 to 2015). Hence, concerning this study's population, H10a is rejected for the performance measure of sales growth.

<u>Results (C) Temporal Considerations Regression Analysis: H10b Market Share (2013 to 2015)</u>

As indicated previously, at the point of the study, for market share, no data for the period of 2013 to 2015 was accessible. Hence, this performance indicator was dropped from further investigations pertaining to RQ4.

<u>Results (C) Temporal Considerations Regression Analysis: H10c Gross-Profit-Margin (2013 to 2015)</u>

With respect to the EO dimensions' impact onto the performance measure of gross-profit-margin (2012 to 2015), the regression analyses revealed that for the following instances of the control variables a statistical significance can be reported (the significant p level being either at the <0.01 (**) or at the <0.05 (*) value, including their beta coefficients):

- **CV: Firm Age (ln) 10-K:** none
- **CV: Firm Age (ln) LTS:** none

- **CV: Firm Size (ln) 10-K:** GPM 2012 (-0.219**), GPM 2013 (-0.223**), GPM 2014 (-0.215**)
- **CV: Firm Size (ln) LTS:** GPM 2012 (-0.202**), GPM 2013 (-0.211**), GPM 2014 (-0.192**)

Furthermore, with regards to gross-profit-margin, the following dimensions (as independent variables) reached the significance p-value within the LTS and 10-K sample groups:

- **IV: X1 Autonomy 10-K:** none
- **IV: X1 Autonomy LTS:** none

- **IV: X2 Competitive Aggressiveness 10-K:** none
- **IV: X2 Competitive Aggressiveness LTS:** GPM 2014 (-0.106*)

- **IV: X3 Innovativeness 10-K:** GPM 2012 (0.104*), GPM 2013 (0.099*)
- **IV: X3 Innovativeness LTS:** GPM 2012 (0.111*), GPM 2013 (0.112*), GPM 2014 (0.105*)

- **IV: X4 Proactiveness 10-K:** none
- **IV: X4 Proactiveness LTS:** none

- **IV: X5 Risk-Taking 10-K:** none
- **IV: X5 Risk-Taking LTS:** none

Following the above-presented listing, for gross-profit-margin, the regression analysis reported six instances of significance for the study period of 2013 to 2015 (inclusive 2012): Firstly, within the LTS data group, a negatively significant effect of competitive aggressiveness onto GPM 2014 (-.106*) was reported. This effect was not repeated within the 10-K data file. Secondly, for innovativeness, it was observed that this dimension had a repeatedly positive significant effect on GPM in the 10-K data in 2012 (.104*) and 2013 (.099*). Similar was reported in the LTS group with positively significant effects of innovativeness onto GPM in the years 2012 (.111*), 2013 (.112*), and 2014 (.105*). All other EO dimensions were not significantly related to gross-profit-margin in the defined period (neither within the 10-K nor the LTS file sources). Thus, concerning H10, one can assume that for the performance indicator of gross-profit-margin, none of the EO dimensions has a significant positive effect on three-year firm performance (2013 to 2015). However, in the LTS data, it was observed that innovativeness has a two-year positive effect. Hence, H10c is rejected for the performance measure of gross-profit-margin.

Results (C) Temporal Considerations Regression Analysis: H10d Return on Assets (2013 to 2015)

With respect to the EO dimensions' impact onto the performance measure of return on assets (2012 to 2015), the regression analyses revealed that for the following instances of the control variables a statistical significance can be reported; this for the specific years in the 10-K and LTS data groups (the significant p level being either at the <0.01 (**) or at the <0.05 (*) value, including their beta coefficients):

- **CV: Firm Age (ln) 10-K:** none
- **CV: Firm Age (ln) LTS:** none

- **CV: Firm Size (ln) 10-K:** ROA 2013 (0.099*), ROA 2015 (0.179**)
- **CV: Firm Size (ln) LTS:** ROA 2015 (0.175**)

Furthermore, for return on assets, the following dimensions (as independent variables) reached the significance p-value within the LTS and 10-K sample groups:

- **IV: X1 Autonomy 10-K:** ROA 2013 (0.100*)
- **IV: X1 Autonomy LTS:** none

- **IV: X2 Competitive Aggressiveness 10-K:** none
- **IV: X2 Competitive Aggressiveness LTS:** none

- **IV: X3 Innovativeness 10-K:** none
- **IV: X3 Innovativeness LTS:** none

- **IV: X4 Proactiveness 10-K:** none
- **IV: X4 Proactiveness LTS:** none

- **IV: X5 Risk-Taking 10-K:** ROA 2012 (-0.117*), ROA 2013 (-0.123*), ROA 2014 (-0.105*)
- **IV: X5 Risk-Taking LTS:** ROA 2013 (-0.121*), ROA 2014 (-0.105*)

As presented in the listing above, for return on assets, the regression analysis reported a total of six instances of significance for the study period of 2013 to 2015 (inclusive 2012): Firstly, within the 10-K data group, a positively significant effect of autonomy onto ROA 2013 (.100*) was perceived. This effect was not repeated within the LTS data file. Secondly, for risk-taking, it was observed that this dimension had a reiterated negatively significant effect onto ROA in the 10-K data in the years 2012 (-.117*), 2013 (-.123*), and 2014 (-.105*). This was similarly reported in the LTS group, presenting a negatively significant effect of risk-taking on ROA in 2013 (-.121*) and 2014 (-.105*) (with F for both file sources being not significant). All other EO dimensions were not significantly related to return on assets in the defined period (neither within the 10-K nor the LTS file sources). Thus, with respect to H10, one can assume that for the performance indicator of return on assets, none of the EO dimensions has a significant positive effect on the three-year firm performance. Furthermore, in both file sources, it was observed that risk-taking even has a two-year negative effect. Hence, H10d is rejected for the performance measure of return on assets.

Over all studied years and file sources, only for specific performance measures and years, the control variables of firm age and size reached statistical significance. Such as for the 10-K data of sales growth 2012 where a value for firm age of -.189 and for firm size of -.138 was reported. This indicates that, for the studied case, sales growth was higher for younger and smaller firms, respectively. At no other instances, both the control variables reached the significance value for the same performance measure and year (in one file source).

To summarise the findings of H10, firstly, it was observed that the results of both file sources (10-K and LTS) compare well since their values were predominantly within the same magnitude. Secondly, regarding the hypotheses testing, for the linkage of EO with the individual performance indicators, no positively significant relationships over the defined period of three years were reported. However, for innovativeness with GPM a two-year positive and for risk-taking with ROA a two-year negative effect was observed.

5.6. Hypotheses Confirmation Overview Table

Table 50 provides an overview of employed tools for analyses to find support for H1 through H10 including a summary of this study's findings.

Table 50: Data Analysis and Results: Hypotheses Confirmation Overview Table

H ID	Hypothesis	Analysis Tools	Hypothesis Confirmation/Rejection
H1:	The configuration of EO dimensions associated with optimal performance is not the same across industry types of high-tech and less-tech.	Configuration Analysis: Ideal Profile Method including construct means, standard deviation, correlations among study variables, ANOVA	Rejected: overall no significant difference between HT and LT reported; except for one instance of competitive aggressiveness within the 10-K data
H2:	Deviation from an ideal profile (configuration) of EO dimensions is negatively related to firm performance.	Configuration Analysis: Ideal Profile Method including construct means, standard deviation, t Test, Profile Deviation Scores, Regression Models	Supported: results support the hypothesis as to which deviation from an ideal profile (configuration) of EO dimensions is negatively related to firm performance across both file sources
H3:	Firm innovativeness is more strongly (positively) related to business performance in high-tech than in less-tech industries.	Contingency Analysis: Regression Test in multiple samples studying the EO-performance linkage moderated by industry types	Rejected: for the subdivides of H3a sales growth, H3c gross-profit-margin, and H3d return on assets Partially supported: for H3b where it was observed that innovativeness is, in fact, more strongly (positively) related to business performance (here market share 2012 in the LTS data) in HT than in LT industries
H4:	Firm risk-taking is more strongly (positively) related to business performance in high-tech than in less-tech industries.	Contingency Analysis: Regression Test in multiple samples studying the EO-performance linkage moderated by industry types	Rejected: for this hypothesis and its subdivides as no significant differences between HT and LT were reported
H5:	Firm proactiveness is more strongly (positively) related to business performance	Contingency Analysis: Regression Test in multiple samples studying the EO-performance linkage	Rejected: for this hypothesis and its subdivides as no significant differences between HT and LT were reported

	in high-tech than in less-tech industries.	moderated by industry types	
H6:	Firm autonomy is more strongly (positively) related to business performance in high-tech than in less-tech industries.	Contingency Analysis: Regression Test in multiple samples studying the EO-performance linkage moderated by industry types	Rejected: for this hypothesis and its subdivides as no significant differences between HT and LT were reported
H7:	Firm competitive aggressiveness is more strongly (positively) related to business performance in high-tech than in less-tech industries.	Contingency Analysis: Regression Test in multiple samples studying the EO-performance linkage moderated by industry types	Rejected: for the subdivides of H7a sales growth, H7c gross-profit-margin, and H7d return on assets Partially supported: for H7b where it was observed that competitive aggressiveness is, in fact, more strongly (positively) related to business performance (here market share 2012 in the 10-K data) in HT than in LT industries
H8:	Industry turbulence positively moderates the relationship between EO and firm performance such that EO will have a greater effect on firm performance when industry turbulence is high rather than low.	Contingency Analysis: Regression Test in multiple samples studying the EO-performance linkage moderated by industry conditions	Not tested: for the subdivide of H8a sales growth (for both sales and employee stability) due to study variables correlation Rejected: for the subdivides of H8c gross-profit-margin and H8d return on assets Partially supported: positively moderating effect for the subdivide of H8b market share (for sales stability); moreover, also a negatively moderating effect for employee stability was reported
H9:	Industry munificence negatively moderates the relationship between EO and firm performance such that EO will have a lower effect on firm performance when industry munificence is high rather than low.	Contingency Analysis: Regression Test in multiple samples studying the EO-performance linkage moderated by industry conditions	Not tested: for the subdivide of H9a sales growth (for both sales and employee growth) due to study variables correlation Rejected: for the subdivides of H9c gross-profit-margin and H9d return on assets Partially supported: negatively moderating effect for the subdivide of H9b market share (for employee growth)
H10:	EO has a positive effect on 3-year firm performance.	Regression Test in multiple samples studying the EO-performance linkage over a period of 3 years	Rejected: no confirmation was found on the multi-dimensions' positive effect on three-year firm performance. However, for GPM two-year positive effects (with innovativeness) and for ROA two-year negative effects (with risk-taking) were observed

CHAPTER 6: DISCUSSION

Theory is an essential factor that separates researchers of management from journalists or practitioners (Makadok et al., 2018). Instead of presenting fundamental and novel “grand theories”, the majority of contributions in strategic management literature expand, refine, or employ a gained theory in new ways (Makadok et al., 2018). According to Makadok et al. (2018), theory can be understood as an abstraction and simplification of the reality that embodies an effort to grasp artefacts of a phenomenon dealing with a specific question. Even though the attributes of accuracy, simplicity, and generality are common in theory building, it is rarely possible to combine all of them into one. Thus, usually contributions affect one or two aspects of a theory but not the whole concurrently. Regardless this restricted scope, such findings may be significant to the developments in the respective practice (refer to Makadok et al., 2018).

Makadok et al. (2018) have prepared a guide on building contributions to recognise rather unexplored areas that may benefit from such investigations. They propose to break down theories into various elements that can be combined individually; research questions as input and explanations, predictions, prescriptions and others as output, while the middle elements are used as adaptable levels of theorising. These middle levels comprise contributions regarding the modes of theorising, levels of analysis, phenomena, causal mechanisms, constructs/variables, or boundary conditions. Such combinations then refer to the so-called theory space that is present in this area. While portions of these spaces may be flooded with existing studies, others may have received less attention. These empty spaces may provide prospects for upcoming scholarly works.

According to this study, the following chapter will present the discussion of findings pertaining to research question 1 through 4. This includes contributions to scholarly works from an ideal profile configuration analysis of EO under consideration of industry types (RQ1), contributions from a regression analysis on the contingency relationship of EO with performance moderated by industry types (RQ2) and by industry conditions (RQ3), and contributions towards the understanding of the contingency relationship of EO with performance under temporal considerations (RQ4). It aims to relate the corresponding findings to the existing theory of EO by locating explanation for them within previous works, by finding deviations in form of contributions, while primarily focussing on the novel methodological research approach of CATA, the triangulated effects of using different data sources, how to best treat EO, and the debate around this in order to shape guidelines for future studies within the field. In line with Makadok et al.'s (2018) outlined guidelines for theory building in strategic management, all contributions of this thesis are matched to their middle levels of the theorising process. These are presented in brackets within the following sections.

6.1. Discussion of Findings pertaining to RQ1: Contributions from an Ideal Profile Configuration Analysis of EO under Consideration of Industry Types

In the past, causal mechanisms in the EO-performance relationship have mostly been implicated instead of specifically assessed due to a lack of research on configurational theory (Wiklung & Shepherd, 2011). Therefore, research question 1 sought to ascertain whether a multidimensional model of EO explains superior business performance and sought to investigate whether a perfect fit of the EO dimensions differs when accounting for the two industry types of high-tech and less-tech intensive. The theory of configuration analysis was applied to examine whether the alignment of a firm's EO with an 'ideal' benchmark profile (configurations of EO dimensions) as defined by a set of high-performing firms affects its relationship with business performance (initially investigated by Hughes et al., 2007). Following this, the configurations of the remaining firms were tested and compared to determine whether deviation from the 'ideal' benchmark would undermine superior firm performance. As a result, it was concluded that EO is, in fact, associated with high performance in the set of ideal profile firms and deviance is associated with mediocre performance in the remaining group. Inconsistencies in the EO-performance linkage, therefore, are caused by a poor configuration of the EO dimensions (see also Hughes et al., 2007; Hughes et al., 2017; Kearney et al., 2017; Kreiser & Davis, 2010). Furthermore, it was examined whether the configuration of EO dimensions associated with optimal performance is the same or not across the industry types of high-tech and less-tech. Historically, the literature has made no effort to clarify whether and to what extent the EO required by a firm to secure high performance varies across industries, taking for granted that all firms simply need more of it and more of its dimensions. It was discovered that ideal profiles *do not* differ across the two industry types of high-tech and less-tech. Accordingly, and in response to research question 1, this study's findings contribute to the theory and knowledge regarding EO in the following manner:

Firstly, correlating all EO dimensions with each other presented no relationship between them. Similar effects were observed in both file sources of LTS and 10-K as well as across both industry types of HT and LT. (A) This was regarded as the first indication of EO being recommended to be assessed according to a multidimensional construction, requiring each dimension to be treated individually due to the lack of correlation between them (theory contribution to mode of theorising). This finding is consistent with the conceptualisation of Lumpkin and Dess (1996) as well as the findings of Hughes et al. (2017) and Short et al. (2009), more recently Schueler et al. (2018). (B) Moreover, this study sets an empirical ground in EO research by determining that the five EO dimensions are not correlated in both the 10-K and LTS data as well the high-tech and less-tech intensive industry groups, which is certainly new to this field of study. This finding reveals that both the file sources and firm industry types are not substitutive in detecting EO (methodological contribution to constructs/variables).

Secondly, comparing the mean values of the EO multi-dimensions between the file sources of 10-K and LTS displayed different levels of EO communicated across both sources (similarly to finding one (B)). Following Hughes et al.'s (2007) initial investigations, profiles can be defined theoretically – by attempting to predict ideal values per dimensions based on existing studies – or empirically – by studying empirical data as derived from high performers (see also Vorhies & Morgan, 2005; Hughes et al., 2017; Kearney et al., 2017; Kreiser & Davis, 2010). However, in actuality, the profiles of EO cannot be identified from the EO theory since the studies lack maturity and context sensitivity. As a consequence, here, the ideal profiles have been defined empirically (via CATA in 10-K and LTS data files) and displayed varying levels.

(A) These findings contribute to the existing context-specific knowledge of EO (empirical contribution to level of analysis) by depicting that in the defined groups of HT firms, mean values of autonomy, innovativeness, and risk-taking vary when accounting for the two file sources while they differ based on autonomy, competitive aggressiveness, and proactiveness in the defined groups of LT firms across the two sample sources of 10-K and LTS. Hence, differences in mean values were observed across both file sources of 10-K and LTS. Due to the lack of employing a CATA approach in previous EO research, this observation has remained unnoticed thus far. Consequently, there is a need for the careful and individual treatment of both file sources within a research study in future, considering a study's aims. Indeed, this points to the dangers of using such a proxy measurement of EO and the sensitivity of that measurement to the data source.

(B) Furthermore, EO research has reported that levels of firm EO may vary in its nature and given context (Lumpkin & Dess, 1996; Miller, 2011; Zahra et al., 2014). A variety of aspects may simultaneously impact EO and performance outcomes (Miller, 2011), which is why research samples bearing the richness of contexts are crucial (Gartner, 2008). Here, support was found that, in terms of a computer-aided text analysis and the usage of firm published files, the researcher's choice of the sample source is decisive with regards to the context since such files are written to different target audiences (empirical contribution level of analysis); hence, as observed, they communicate different levels of EO within them. The CATA approach was applied to both file sources. One of the future challenges is to determine then if one of the data sources is most representative.

Thirdly, comparing the ideal profiles of HT versus LT illustrated that the configuration of EO dimensions associated with optimal performance does not differ across the two industry types. This effect was noted in both file sources of LTS and 10-K, with the exception of competitive aggressiveness within the 10-K data where a significant difference between HT and LT firms was found. Some scholars have studied firms of specific industry categories such as high-technology intensive firms (Hughes & Morgan, 2007; Morgan & Strong, 2003), non-high-tech/less-tech intensive firms (Smart & Conant, 1994) or both in some cases (Rauch et al., 2009). Other research has considered the lifecycle stages in emerging, growing, and mature industries (Covin & Slevin, 1990; Hughes & Morgan, 2007; Lumpkin & Dess, 1996) or their proximity in time to an economic shock (Kraus et al., 2012). However, historically, the literature has made little effort to ascertain whether and to what extent the EO required by a firm to secure high performance varies across industries, taking for granted that all firms require it in a higher degree along with a higher value of its dimensions. According to Rauch et al. (2009), differences were found between high-tech and non-high-tech industries; wherein, there may be a stronger EO-performance correlation in the former industry group; this formed basis for the limited amount of subsequent research, hypothesising differing levels of the ideal EO profiles across the defined industry types.

Consequently, (A) this study contributes to existing EO research by setting an initial and clear industry type categorisation of high-tech and less-tech intensive firms within the S&P 500 (methodological contribution to constructs/variables), followed by the gained knowledge that (B) firms being regarded as higher performers do not differ in their EO level configuration when accounting for an HT versus LT industry type categorisation (methodological contribution to causal mechanisms). This research is the first to actually validate what has been a long-standing but untested assumption in the study of EO – that there is indeed no difference in an ideal configuration when accounting for the industry types of high-tech and less-tech, which refutes the generic perspective of Rauch et al. (2009) in this study's setting (H1 rejection; except for competitive aggressiveness within the 10-K data). The main reason for this new finding potentially lies in the industry type classification. While Rauch et al. (2009) refer in their meta-analysis to 'high-tech' and 'non-high-tech' industries, this study differs from their overly simplified industry type categorisation that did not bear the nuance and depth, especially pertaining to the 'less-tech' intensive industry type (that was employed here). As S&P 500 firms are multi-billion-dollar businesses – therefore, comprise a variety of divisions – we have experienced that none of them is without a technical division. Thus, for the defined population, a non-high-tech intensive categorisation was not appropriate. Ultimately, it has been concluded that an EO configuration is essential for superior business performance regardless of whether a firm is within the high-tech or less-tech intensive space. The value of an ideal EO is not sensitive to industry types whereas the profile configuration matters for both groups.

Fourthly, it was observed that the usage of EO in firm-published texts is detectable in both file sources of 10-K and LTS at the three defined levels of high, medium, and low performers. Similar effects were depicted across the two industry types of HT and LT. Furthermore, the knowledge about the different levels of EO being communicated within the 10-K and LTS sample sources as discussed within finding two is advanced by the new insights of (A) EO dimensions being existent within all defined subsets (high, middle, and poor performers) and (B) EO levels differing within the subsets when accounting for the two sample sources (empirical contribution to mode of theorising). Thus, EO is measurable for all firms within the population regardless of their performance level. This study is one of the first to validate the usefulness of both file sources across the three performance levels for the text-based detection of EO.

Fifthly, due to this study's large and extensive database, comprehensive sets of the benchmarks for the ideal profile configuration scores were defined; this was done for each of the distinct performance levels, industry types, file sources, and EO multi-dimensions. While the provision of configuration scores was accomplished by other scholars before (in the context settings of Hughes & Morgan, 2007; Hughes et al., 2017), this study contributes to EO research by (A) defining not only the ideal benchmark levels of EO per high-tech and less-tech industry type (inclusive of research methodology) but also the ideal levels of EO for both sample sources of 10-K and LTS that can be employed for future research (methodological contribution to constructs/variables). This detailed breakdown, including the approach of computer-aided text analysis, is still very much at a formative stage in the field of EO (see also Short et al., 2009) and is regarded as a helpful guideline for future research. Following this, computer-aided text analysis has shown to provide easier and broader access to measuring firm-dimensional levels of EO than its traditional counterparts.

Lastly, it was found that deviation from the ideal profile (configuration) of EO multi-dimensions is negatively related to firm performance. Similar effects were observed across both sample sources of 10-K and LTS. For the multi-dimensions of EO as such, it was necessary to investigate whether there existed an ideal combination of these dimensions that may yield superior performance (such as Van de Ven & Drazin, 1985 or Kearney et al., 2017; Kreiser & Davis, 2010). Having identified the high performers and their conditions as a sub-set within the population, a comparison against all other performers allowed for the understanding of why some firms achieved greater performance outcomes than others (as also observed by Hewett, Roth, & Roth, 2003) and whether EO is (at least in part) responsible for that (see also Hughes et al., 2007; Kearney et al., 2017). Within the sub-set of high performers, the firms EO configurations were considered ideal as they represented a complex set of various independent, and equally reinforcing organisational characteristics that allow a firm to secure its aims (such as Ketchen, Thomas, & Snow, 1993; Miller, 2011). Deviation indicated a lack of fit based on the degree to which the level of the population’s EO multi-dimensions varied from that of the ideal profile sub-set as derived from the high performers (see also Hughes et al., 2007; Kearney et al., 2017). Theoretically, this is consistent with the overriding concern in

Lumpkin and Dess' (1996) conceptualisation of EO against the Miller/Covin and Slevin perspective: that each dimension of EO is capable of inflicting positive or negative contributions to firm performance. Hughes and Morgan (2007) were one of the first scholars to apply a configurational approach of EO and to support it empirically (aligned with this study's findings in correspondence to the study settings), followed by another study (Hughes et al., 2007) which advised young venture firms about the importance of EO configurations on firm performance (more recently Hughes et al., 2017). In contrast to a plethora of studies (see for example the meta-analysis of Rauch et al., 2009) that persist in researching the EO-performance relationship as a linear phenomenon, here, (A) this finding accompanies previous literature on the ideal profile method of EO (such as Hughes et al., 2007 and Kearney et al., 2017) according to which an ideal profile deviation has a negative impact on firm performance (empirical contribution to modes of theorising), while also ascertaining that the optimal configuration of EO is not linear and depends on a precise mix of its five multi-dimensions (H2 support).

<u>Concluding Comments on the Discussion of Findings pertaining to RQ1:</u>

Within EO scholarly works, a common understanding regarding the existence of different relationships for distinctive types of businesses persists (Schueler et al., 2018; Wiklund & Shepherd, 2005). According to configurational theory, this study confirmed, accompanying the findings of previous literature on EO configurations, that performance is increased by an optimal alignment of key variables within firms (refer also to Hughes et al., 2017; Kearney et al., 2017). It implies the causal need for the 'perfect' or 'ideal' fit of those variables to each other even though such an ideal profile of EO was discovered to not differ regarding the two industry types of HT and LT.

Configuration theory is both a set of predictive guidelines and an associated analytical technique to determine what specific configurations or constellations of factors are exhibited by firms characterised as being 'high performers'. These specific configurations have successfully been defined throughout the analyses of research question 1. In conclusion, deviance has been associated with the undermining of firm performance in comparison to ‘better configured’ rivals. Hence, it can be reasoned that a configurational assessment enables scholars to develop a precise profile of a set of dimensions within a set of firms (Hughes et al., 2017; Kreiser & Davis, 2010).

Lumpkin and Dess (1996) theorised that not all the dimensions of EO might be beneficial for performance (empirically demonstrated by Hughes and Morgan, 2007), although Miller (1983) was evident in his argument that firms must possess all dimensions of EO at a high level to be entrepreneurial. Here, initial support was found for the multidimensional perspective and Lumpkin and Dess’ (1996) line of argument (this will be further investigated at RQ2). It is this rather stark dichotomy that created a theoretical puzzle surrounding what form of EO is truly the best for performance: a contingency form, or a configurational form. Configuration theory eschews two assumptions held in the contingency theory. First, that not all dimensions of a construct are inherently as valuable or as desirable as each other (here confirmed), and second, that what is necessary for optimal performance may well differ across alternative groups of firms (here rejected in context to the HT and LT industry types). This envisions a fundamentally different view of ‘context’ that changes it from a control variable, typically under contingency theory, to one that is central to the consideration of ‘fit’ under the configuration theory (see Zahra & Wright, 2011, & Zahra, Wright & Abdelgawad, 2014, for a debate about the absence of context in entrepreneurship and EO research). Next, the discussion of findings pertaining to research question 2 will provide significant insights into the contingency perspective of the EO-performance linkage in reference to both industry types as moderating variables.

6.2. Discussion of Findings pertaining to RQ2: Contributions from a Regression Analysis on the Contingency Relationship of EO with Performance Moderated by Industry Types

In order to construct the relationship of EO onto performance, some scholars have employed a contingency approach of 2-way interactions but have missed the consideration of moderators and the five EO multi-dimensions in such constellation (Shirokova et al., 2016). Therefore, research question 2 sought to ascertain whether the EO-performance linkage replicates across the industry types of high-tech and less-tech and, additionally, sought to investigate to what extent the five dimensions of EO impact individual business performance measures positively or negatively. The early research relied on the universal-effect model in which a fixed level of EO was assumed to be universally beneficial for firm outcomes (Wiklund & Shepherd, 2005). Questioning the universal conceptualisation, theorists started using contingency theories to grasp whether a certain EO level would have a greater or lesser impact on performance (Covin& Wales, 2018; Wiklund & Shepherd, 2005) since each firm differs by diverse context driven situations. Contingencies were originally described as a two-way interaction and became a prominent model in EO research. For example, Wales et al. (2011) labelled this as an initiative to unlock the so-called 'black box' of EO, which has to do with how EO exerts its effects on firm performance and the conditions, or contingencies, surrounding that effect. Covin and Wales (2018), furthermore, argued that the conceptualisation and measurement of this construct relate to the larger understanding of corporate entrepreneurship-linked constructs. As some dimensions of EO may be vulnerable towards their contingency to performance, this became a matter of urgency after the meta-analysis of Rauch et al. (2009) concluded on the generally positive effect of EO on firm performance. What became apparent is that at least in their ability to construct a meta-analysis, the study of these contingencies remains largely unexplored.

This study discovered that EO is, in fact, recommended to be perceived as a multi-dimensional construct (comprising of the five dimensions of EO) that has a positive and negative impact on individual performance measures; however, such linkage generally does not differ with respect to the industry types of high-tech and less-tech intensive (except for two dimensions related to the market share measure). Accordingly, and in response to research question 2, this study's findings contribute to the theory and knowledge about EO in the following manner:

Firstly, concerning the mean values of the EO dimensions of autonomy, competitive aggressiveness, innovativeness, proactiveness, and risk-taking presented similar ranges when comparing both files sources of 10-K and LTS. (A) Building upon the previous findings of research question 1, this is considered as a novel contribution to EO research since even though individual levels of firm EO scores may differ between the file sources, the populations' overall mean levels compare well when accounting for the 10-K versus LTS file source. This observation implies that both file sources provide similar measurement outcomes on certain measures (empirical contribution to level of analysing) which have been disregarded by earlier research on EO. Thus, depending on a study's goals, both file sources are considered as valuable basis for measuring a firm's EO.

Secondly, comparing mean value levels of the multi-dimensions of EO of the HT versus the LT group displayed a variation in innovativeness and proactiveness while the dimensions of autonomy, competitive aggressiveness, and risk-taking remained consistent between both groups. Similar effects were observed in both file sources of LTS and 10-K. (A) Following the previous findings of RQ1 (firms need different configurations for superior business performance) as well as finding 1 of RQ2, this outcome contributes to EO research by providing an indication of the varying importance of EO dimensional means when accounting for a firm's industry type categorisation, which is indeed new to the field of EO (empirical contribution to level of analysis). In conclusion, for example, an average firm regarded as being high-tech intensive would be expected to have similar EO ranges in the dimensions of autonomy, competitive aggressiveness, and risk-taking in comparison to an average LT firm; however, different ranges of EO regarding the remaining dimensions would be suspected.

Thirdly, a clustering method for EO levels was introduced to localise firms within a sample that are regarded as outliers due to their, for the population, atypical configuration of EO. (A) This uniquely defined methodological approach allows researchers to assess their EO study sample for outliers and to take, if required, corrective action (methodological contribution to constructs/variables). Alternatively, the outliers might in fact be of interest going forward due to the study approach of a research; for example, as evidenced through the context of this thesis. (B) Next, this method was applied to the defined sample groups of HT and LT resulting in a list of outlier-firms within the S&P 500 in reference to EO that may provide the basis for future research in this sphere (methodological contribution to levels of analysis).

Lastly, an interaction terms regression analysis was conducted on the linkage of the EO dimensional variables of innovativeness, risk-taking, proactiveness, autonomy, and competitive aggressiveness with the individual performance indicators of sales growth, market share, gross-profit-margin, and return on assets. This analysis concluded that solely innovativeness and competitive aggressiveness are more strongly positively related to market share in high-tech than in less-tech intensive firms (within selected data sources); hence, EO appears to be insensitive to the critical contingency including the firm's industry types. These findings advance current EO research in the following ways:

(A) This study clearly supports the need of an individual assessment of the five EO multi-dimensions (as initially conceptualised by Lumpkin and Dess, 1996). Following the investigations of section 2.3 on current EO literature, there exists only moderate research on, firstly, all five, and secondly, individually treated EO dimensions. Scholars tend to predominantly study the three uni-dimensions as initially described by Miller (1983), while only a few consider and outline the causal mechanisms of the five multi-dimensions (refer to section

2.3; Lumpkin and Dess, 1996 and Rauch et al., 2009). Miller (1983) has defined an entrepreneurial firm as one that “engages in product market innovation, undertakes somewhat risky ventures, and is first to come up with ‘proactive’ innovations, beating competitors to the punch” (p.771). Major studies on the unidimensional approach include Zahra (1991), Zahra and Covin (1995), and Wiklund and Shepherd (2005). Others have repeatedly pinpointed and targeted their research on these three core dimensions alone (see also Hughes & Morgan, 2007). Following previous discussions, inconsistencies have been reported on the selection of a dimensional approach referring primarily to the multidimensional model as one that calls for future research to gather greater EO insights on the firm level (refer to section 2.3 and Schueler et al., 2018). Furthermore, due to the advanced scholarly works on EO, Miller (2011) himself acknowledged that Lumpkin and Dess’ (1996) five multi-dimensions should be considered when evaluating the EO-performance linkage.

Moreover, the majority of literature and conceptualisations on EO remain true to the assumption that high values of all dimensions are required for a firm to have an EO and, in turn, for it to experience high performance. Here, it was observed that this is not strictly true. There is a common understanding of a positive EO-performance linkage for all (such as Martins & Rialp, 2013; Rauch et al., 2009; Shirokova et al., 2016; Wiklund & Shepherd, 2005; Zahra & Covin, 1995) or at least a combination of the five dimensions (Hughes & Morgan, 2017; Wales et al., 2011). Whereas some dimensions may have a positive impact, others could have a neutral or even negative influence (such as Hart, 1992; Hughes & Morgan, 2017; Morgan & Strong, 2003; Smart & Conant, 1994; and as theorised by Lumpkin & Dess, 1996). Furthermore, Wales (2016) argued that (based on the direction of travel in recent works like Anderson et al., 2015; Covin and Lumpkin, 2011) a firm requires stable and recurring patterns of risk-taking, innovativeness, and proactiveness to be entrepreneurially oriented. Anderson et al. (2015) attempted to reconceptualise EO as being made up of attitudes and behaviours in which risk-taking as an attitude is needed before the behaviours of innovativeness and proactiveness can follow. However, referring to Lumpkin and Dess (1996), EO dimensions could lead to favourable or unfavourable outcomes depending on the various firm contexts. This effect could, moreover, change with time upon the alteration of the nature of a firm's EO (Hughes & Morgan, 2007). Consequently, EO may be more or less valuable under different industrial or contextual conditions but it can also oscillate over time depending on the contextual (e.g., environmental or industrial) contingencies acting upon the firm (time is addressed along with the investigations of research question 4). This study advances the knowledge and understanding of EO and its contingencies by examining, for the first time, its five dimensions on the multidimensional basis across such an expansive number of firms through the nature of the data sources procured (CATA approach). The results support Lumpkin and Dess' (1996) initial assessment regarding the existence of the five dimensions, and the assumption that they each impact performance differently. Hence, it would be recommended to assess the multi-dimensions individually instead of regarding them as an overall EO measure. For example, in reference to firms in the HT space, here, it was observed that risk-taking has a negative effect on market share while autonomy has a positive effect on return on assets. Refer to section 5.3 for the comprehensive overview of all dimensions and their linkage to performance. Furthermore, this clearly rejects Rauch et al.'s (2009) statement (as well as the work of Shirokova et al., 2016) of the EO-performance relationship being one that is direct and always positive (similarly was noted by Wang, 2008). This finding is because significantly negative EO-performance relationships have been observed across both file sources (empirical contribution to modes of theorising).

(B) Performance has been considered as the most researched DV in past studies of EO (Gupta & Wales, 2017; Rauch et al., 2009; Wales et al., 2013) whereas this study's findings strongly recommend the employment of distinct performance measures instead of an overall one. This research contributes to existing scholarly works on EO by applying individual performance indicators as described by Lumpkin and Dess (1996) and finding the support that the multi-dimensions of EO impact various performance measures differently; hence, require individual treatment as well (empirical contribution to modes of theorising as well as constructs/variables). Even though Zahra (1993) suggested the extension of Covin and Slevin's model (1991) by considerations that would cover additional organisational values such as workforce motivation, turnover, and firm culture (see also Wales, 2016), the need to assess individual measures was dismissed by a variety of scholarly works. As a consequence, effects on these have not been examined in the context of EO properly till date. These measures may include traditional financial and accounting indicators such as sales growth, market share, and profitability (Lumpkin & Dess, 1996). Similar to Lumpkin and Dess (1996), Rauch et al. (2009) have described performance as a multidimensional concept that requires the assessment of factors such as sales growth and ROI (Smith, 1976; also refer to Schueler et al., 2018). Although there may be a little convergence of different financial indicators (Murphy, Trailer, & Hill, 1996) on a conceptual level, today research can differentiate between growth and profitability measures (Rauch et al., 2009) such as the initial example of long-term investments. Additionally, according to non-financial measures, Lumpkin and Dess' work (1996) has discussed 'overall performance' (as an aggregate of various measures) as being valuable since it connects firm goals, objectives, and target levels (Kirchhoff, 1978) into a hypothetical link that could be further analysed. Moreover, their conceptualisation has introduced another component as well – stakeholder satisfaction (Lumpkin & Dess, 1996). This aspect mirrors Rauch et al.'s meta-analysis (2009) since it suggested the incorporation of goals such as satisfaction or global success ratings provided by business owners or managers. Other factors to be included may comprise reputation, goodwill, and public image, as well as a certain level of commitment and satisfaction of the workforce (Rauch et al., 2009; Zahra, 1993). While the assessment and definition of a complete set of performance indicators in EO scholarly works is outstanding, this research strongly urges the essentiality of the multidimensional linkage of EO to a variety of financial performance indicators that may be extended to non-financial measures by future research; a level of maturity is to be reached.

(C) Lastly, this research supports findings substantiating that solely innovativeness and competitive aggressiveness are more strongly positively linked to business performance in HT than in LT firms. This novel finding relates to the context sensitivity that is required in EO research. Even though here the most of the EO-performance relationships (of the five dimensions with the four performance measures) did not differ when accounting for the firm industry types as a moderating variable, the two exceptions above make an industry type categorisation inevitable in the context of EO related research. This backs the scholarly work of Hughes and Morgan (2007) according to which EO may be more or less valuable under different industrial or contextual conditions (refer also to point (A) as empirical contribution to modes of theorising and Zahra et al., 2014); moreover, that EO does not affect performance directly (refuting the findings of Rauch et al., 2009). A further break-down of firm industry types into actual industries may depict even greater effects related to the industry variable.

Concluding Comments on the Discussion of Findings pertaining to RQ2:

In reference to previous contingency studies on EO, the linkage of two variables is dependent on the level of a third one (Miller, 1983; Rauch et al., 2009; Rosenberg, 1968). Thus, to include moderators into a relationship, here firm industry types, helped limit potential misinterpretation and allowed for a more precise and fine-grained consideration of the relationships across EO (Lumpkin & Dess, 1996; Rauch et al., 2009). Ultimately, within this study, it was necessary to consider both contingency (RQ2) as well as configurational views (RQ1) for a more holistic perspective of the outlined population.

Covin and Slevin (1991) had initially suggested that a comprehensive firm-behaviour-model of EO is required to include the individual, environmental, and organisational variables. Their research does not explicitly recommend the use of either contingency or configurational theories but creates the basis for a multidimensional conceptualisation as suggested by Lumpkin and Dess (1996) (see also Wales, 2016). Hence, referring to Wales (2016) and Covin and Wales (2018), a modern theoretical framework with regards to EO should usually integrate strategic considerations as well as organisational and environmental characteristics (refer also to Wiklund & Shepherd, 2005). This framework was employed within this research question via the 10-K and LTS data files as well as through the categorisation of industry types that have been analysed. Furthermore, the here presented results have shown that in EO research both the configurational and contingency approach is essential to construct a comprehensive model of a firm's EO due to their different outcomes.

Previous literature has discussed a variety of relevant variables that pertain to the exploration of the EO-performance linkage (Kraus et al., 2012; Lumpkin & Dess, 1996; Zahra & Covin, 1995; Zahra & Garvis, 2000). However, there is little consensus on the most suitable EO-performance influencers as they are dependent on the firm context and study goals in every sample (Rauch et al., 2009). Even so, internal (Wiklund & Shepherd, 2003) as well as external factors (such as Tan & Tan, 2005) have been identified. Emerging from their meta-analysis, Rauch et al. (2009) were one of the first who called for future research to treat industry characteristics (here comprising of industry types and industry conditions) as impacting variables on the EO-performance linkage. This request is due to the hypothesis of there being a stronger association between EO and performance in high-tech intensive firms, whereas industry had commonly been included as the control variable and not repeatedly investigated as a moderator (Rauch et al., 2009). Choi and Williams (2016) were one of the few to include a firm's technology activities as mediating (not moderating) effect into the EO-performance linkage. Due to previously outlined motivations, within this study, industry type was considered as one moderating variable and has (selectively) shown to present effects on the studied contingency.

Conclusively, along with the examinations of research question 2, it was discovered that EO is, in fact, to be perceived as a multi-dimensional construct (comprising five, not three dimensions) that may have both positive and negative impacts on individual performance measures. However, such linkage generally does not differ with respect to the moderating variable of industry type of high-tech and less-tech intensive firms (with the exception of two dimensions and market share in specific data sources); this indicates that EO is insensitive to this critical contingency. Thus, we conclude that the selection of specific industry types as moderating or control variables depends on a study's goal and context. These findings call for future research and additional initiatives on the context-sensitivity of the industry perspective. For example, by further breaking down an industry categorisation (e.g. based on the two-digit NAICS codes). Next, the discussion of findings pertaining to research question 3 will provide more significant insights into the role of the moderating effects of the industry conditions on the EO-performance linkage.

6.3. Discussion of Findings pertaining to RQ3: Contributions from a Regression Analysis on the Contingency Relationship of EO with Performance Moderated by Industry Conditions

Despite the importance of the external Organisational Task Environment (OTE), little is known about the mechanisms that empower firms to profit from certain environmental settings (Rosenbusch et al., 2013) in terms of their entrepreneurial orientation. It was argued that firms alter their levels of EO in accordance with the external environment which can be used as a mechanism to convert opportunities presented by external factors into superior business performance. Therefore, it was expected that the environmental dimensions of industry turbulence and munificence would affect a firm's EO-performance relationship. Research question 3 sought to ascertain whether EO affects performance consistently when accounting for variations in the industry conditions of turbulence (defined as employee and sales stability) and munificence (defined as employee and sales growth).

The classification of industry conditions has been employed as a basis for operational definitions of both industrial and organisational task environments (OTE) (Dess & Beard, 1984) as well as for a majority of scholarly works in administrative disciplines (Aldrich, 1979; Dess & Beard, 1984; Dill, 1958; Emery & Trist, 1965; Harris, 2004; Lawrence & Lorsch, 1967; Rauch et al., 2009; Starbuck, 1976; Thompson, 1967). OTE has been associated with strategic management research, including implications for top-level management such as on strategy, structure, and business performance (Goll & Rasheed, 1997; Harris, 2004). Initially, it were Dess and Beard (1984) to suggest the need to conceptualise and measure OTE along the dimensions of industry turbulence and munificence. In later years, these have been similarly conceptualised by other scholars (Jurkovich, 1974; Pfeffer & Salancik, 2003; Mintzberg, 1979; Scott, 1981), yet, have only partly been studied within previous works on EO (see Table 2, page 38 and Table 3, page 40; and Awang et al., 2009; Magaji, Baba, & Entebang, 2017; Rosenbusch et al., 2013). This omission is problematic for the literature on EO as causalities between the EO multi-dimensions and performance considering these factors have not been assessed in great detail, thereby failing to provide a holistic picture of the EO-performance relationship and its impact on firm performance.

While the importance of introducing various environmental elements as moderating and mediating variables was noted by researchers only (Vij & Bedi, 2012), Rauch et al.'s (2009) meta-analysis brought company size and firm culture, along with industry, in relation to the EO-performance linkage. They provided an empirical ground for them to being considered as moderately large impactors. However, Rauch et al. (2009) reported that, in most of the cases, such contextual variables have been predominantly treated as control variables (see arguments of Zahra and Wright, 2011 or Choi & Williams, 2016) and that neglects a wider system of effects they may have on firm entrepreneurship. Hence, throughout this study, both industry turbulence and munificence were construed as being moderators with respect to the EO-performance relationship while assessing performance along with its individual measures to test Rauch et al.'s (2009) assumptions. At the conclusion of this research, it was discovered that industry turbulence in terms of sales stability positively and in terms of employee stability negatively moderates the EO-performance linkage for the performance indicator of market share. For industry munificence regarding employee growth, a negatively moderating effect on the EO-performance relationship was observed for the performance indicator of market share. Thus, one of the sales and both the employee variables are considered as central environmental influencers towards the EO-firm performance linkage in regard to the same performance measure. However, for the remaining defined performance indicators, no such effect was observed. Accordingly, and in response to research question 3, this study’s findings contribute to theory and knowledge about EO in the following manner:

Moderating Effects of Industry Turbulence

According to OTE research, firms competing in turbulent industries are more likely to separate homogenous elements of their environments, which may qualify them to manage situations of ambiguity (initially described by Dess & Beard, 1984). Firms may develop these organisational strategies or tactics in the form of buffering, collusion, long-term contracts, or vertical integration to cultivate higher environmental predictability for themselves (Dess & Beard, 1984). Following this, task uncertainty would result in increased knowledge required by top-level managers to make the same decisions and generate the same business performance as with the existing predictability within the business (Dess & Beard, 1984). Aldrich (1979) classified the transition of industry stability to instability as environmental turbulence that leads to externally driven changes, which may result in an even higher uncertainty of firms in terms of their employee stability. Additionally, the interconnection among firms may lead to uncertain and unstable industry settings as changes would come from any direction without prior warning and could be of unforeseeable magnitude (Dess & Beard, 1984; Emery & Trist, 1965).

Quick change and the unpredictability of future events offer plenty of opportunities for firms such as through shifting demands that enable a firm to exploit different and new customer needs including technical discontinuities (Rosenbusch et al., 2013). Yet, in a dynamically changing environment of technological demand and unpredictable competitor behaviour, current opportunities and resources may rapidly become obsolete (Rosenbusch et al., 2013). While dynamic opportunities create challenges for managerial decision making, firms that quickly explore and exploit these can outpace their competitors, enabling increased firm profits. Moreover, entrepreneurial firms may continuously expand or even alter their resource base which averts them from building inflexibilities within the firm (Rosenbusch et al., 2013). This step is regarded as a dangerous condition for firms that operate within dynamic environmental settings as quick corporate adaptions are often required. Thus, turbulent environments trigger an implementation of EO that empowers a certain degree of resource flexibility to reach viability within the firm (Rosenbusch et al., 2013). Therefore, it was expected that such firm stimulation through industry turbulence is an essential positive influencer when accounting for the EO-performance linkage.

Referring to industry turbulence, a moderating effects regression analysis was performed between the EO dimensional variables of innovativeness, risk-taking, proactiveness, autonomy, and competitive aggressiveness and the individual performance indicators of market share, gross-profit-margin, and return on assets. For the studied population, this assessment presented that sales stability positively and employee stability negatively moderates this relationship for market share (in the setting of this study). In reference to the remaining performance indicators (DV), a moderating effect was not found. Hence, this study concludes that EO is sensitive to the critical contingency of moderation with respect to sales and employee stability (empirical contribution to causal mechanisms). This finding extends Dess and Beard's (1984) initial concerns on the existence of OTE in the entrepreneurial praxis as well as Awang et al.'s (2009) and Rosenbusch et al.'s (2013) findings on industry turbulence having a moderating effect on the studied linkage (here furthered by approaching all five dimensions of EO and individual performance measures).

Moderating Effects of Industry Munificence

Industry munificence refers to the extent to which an environment can support sustained firm growth (Aldrich, 1979; Starbucks, 1976). Mature or decreasing industries are categorised as being low on munificence with strong firm competition, price wars, including advantages for low-priced production (Stoel & Muhanna, 2009). On the other hand, industries with a high munificence are said to have an increasing demand and growing customer base (Stoel &

Muhanna, 2009). Inherently, firms target environments that may ease organisational (employee) growth and stability (Dess & Beard, 1984), which helps to save resource expenditures and knowledge for less promising periods. Firms use external relations to secure the flow of resources and to find more munificent environments (Hirsch, 1975).

In a recent work, Hughes et al. (2015) reasoned that EO is a resource-intensive activity. The authors evidenced that slack resource availability fuelled EO, but firm resources then needed to be replenished through networking activities for EO to affect firm performance positively. Hughes et al. (2015) did not consider the industry context of the firm in this equation, but it is apparent that firms in more munificent environments may benefit from higher levels of slack resources (because of their wider availability) and may have fewer difficulties in replenishing these stocks thereafter. Here, sales and employee growth are said to be the principal determinant to an environment's munificence (Dess & Beard, 1984). Ultimately, it was expected that the industry condition of munificence is an essential negative impactor when accounting for the EO-performance linkage.

Pertaining to industry munificence, executing a moderating effect regression analysis between the EO multi-dimensions and the individual performance measures displayed that only employee growth negatively moderates this linkage for market share. For sales growth (MV), and in relation to the remaining performance indicators (DV), a moderating effect was not measured. Hence, this study concludes that EO is sensitive to the critical contingency moderation of employee growth (empirical contribution to causal mechanisms) which adds to Dess and Beard's (1984) initial suggestions on the existence of OTE in the entrepreneurial praxis as well as Awang et al.'s (2009) and Rosenbusch et al.'s (2013) findings on industry munificence having a moderating effect (here furthered by approaching all five dimensions of EO and individual performance measures).

Concluding Comments on the Discussion of Findings pertaining to RQ3:

Surprisingly, significant (negative) effects were observed for both employee measures of turbulence and munificence with respect to market share but not for the remaining financial measures. Firstly, referring to an impact of EO on market share only, we have learned that market share appears to be sensitive to both industry conditions of turbulence and munificence in relation to an EO strategy but to be not sensitive to other forms of performance. This fact is caused by the nature of performance measures. As Lumpkin and Dess (1996) were among the first to propose that the effects of EO may vary across performance indicators, here, support was found that an EO surpassing a certain range may be considered as advantageous or even disadvantageous towards various factors of financial performance (Miller & Friesen, 1982; Zahra, 1993; see also Covin & Slevin, 1991; Wales, Gupta, & Moussa, 2013; Wiklund, 1999). Thus, it is not only EO but also the firm performance that must be assessed according to multiple indicators. Secondly, referring to the moderating effects of the employee measures of turbulence and munificence, it was discovered that these findings align to the initial theory proposed by Dess and Beard (1984) according to which firm resources are essential to organisational survival, and are, therefore, the most relevant predictor within an organisation's environment including the here extended moderating effect on EO-performance. This assumption was based on Aldrich's (1979) view on "environments affect[ing] organisations through the process of making available or withholding resources, and organisational forms [that] can be ranked in terms of their efficacy in obtaining resources." The so-called 'resource dependence' as established by early scholars (Jacobs, 1974; Aldrich and Pfeffer, 1976; Pfeffer and Salancik, 2003) describes a more fine-grained view of organisations by assessing their dependencies on other organisations with regards to resources. They defined an environmental dependence as the importance of a resource to an organisation and the number of sources from which such a resource is obtainable including their quantity, variety, and relative power (Dess & Beard, 1984). For example, a large firm has more available resources that can be employed to chase entrepreneurial strategies; hence, a firm is more likely to take risks if it possesses resources to absorb likely losses (Rosenbusch et al., 2013). Furthermore, Wiklund and Shepherd (2011) argued that EO could shape unique resources in the course of its enacting.

This study's findings extend these early theories according to which employee stability and growth in particular were displayed to be impacting variables to a firm's EO and performance market share linkage. Furthermore, it confirms Vij and Bedi's (2012) and Shirokova et al.'s (2016) raised need for moderating variables in EO research as these may account for varying effects indicating that certain groups of firms increase their EO if an environmental dimension changes while it decreases for other groups of firms (Rosenbusch et al., 2013). Pfeffer and other scholars have revealed that firms can employ various strategies to reduce external resource dependence, such as the size and composition within the boards of directors, merger and joint-venture activities, or executive recruitment and succession (refer also to Dess & Beard, 1984).

Furthermore, research question 3 outlined the importance of the contextualisation of the defined industry conditions. Considering an industry macro level, markets determine differences in economic opportunities between countries (Hoskisson et al., 2013; Zahra et al., 2014), while at a micro level, industries involve contexts that differ in the opportunities that they offer including the strengths of their competitive forces (Porter, 1981). As a consequence, contextual factors affect managerial competitive strategies and the sequencing of a firm's entry and exit into certain industries and markets (Zahra et al., 2014).

Thus, companies are required to build competitive strategies to enable and protect their standing in distinct industries and markets (Carter et al., 1994; Zahra et al., 2014). Here, a majority of previous research has been cross-sectional in nature that outlines various relationships (Zahra et al., 2014) whereas this work urges the need for context sensibility and for a time component in EO research (especially when pertaining to the industry conditions of turbulence and munificence). Additionally, according to Zahra et al. (2014), entrepreneurial strategies are to be sequenced which enables managers to logically decide multiple steps including skills and resources needed to succeed in performance increase and to tackle uncertainty while allowing for organisational growth (Zahra et al., 2014). This task enables a firm to answer to the changing conditions of an industry in terms of its turbulence and munificence. Initial literature has been conducted which assessed the linkage between industry context and entrepreneurial activities. While there has been some attention on both industry conditions (Rosenbusch et al., 2013), there has been no consideration of the contextual effects of an industry turbulence and munificence on the EO-performance linkage in reference to the EO multi-dimensions and individual performance measures. This initiative was started along with this research.

If at all, industry has repeatedly been treated as a control variable, and not as a moderating variable (such as Lumpkin & Dess, 1996; Rauch et al., 2009; for greater insight, refer to Zahra and Wright, 2011) that impacts the discussed linkage in more or less specific settings (Rosenbusch et al., 2013). This study questions this line of argument since the EO-performance relationship has shown to be reliant on a firm's environment. This finding conforms to Miller's (1983) and Covin and Slevin's (1991) proposal according to which external as well as internal variables regulate a firm's EO. Furthermore, there exists a disagreement of research on a major concern of the conceptualisation and measurement of OTE. Numerous researchers have accepted the method of objective (archival) measurement of OTE. However, there are ongoing debates on the selection of industry dimensions while we have shown significant effects of the ones of turbulence and munificence (Awang et al., 2009; Dess & Beard, 1984; Magaji, Baba, & Entebang, 2017; Rauch et al., 2009). Due to that, as stated earlier, when studying a firm's multidimensional impact on performance moderated by industry conditions, others have considered only selected EO dimensions (such as Awang et al., 2009) or an overall performance measure (concerns following this methodological approach were raised earlier) in one study. Consequently, their results may show only parts of the whole picture; refer to Lumpkin & Dess (2001) or Kraus et al. (2012). Hence, there exists the danger of an oversimplified model construction of industry conditions, EO as well as firm performance. Treating their linkage with the moderating variable of industry condition allows for addressing contextual perspectives and for generating a more fine-grained and empirical knowledge reservoir in EO literature (see also Miller, 2011). This aspect overcomes the dispute on the ability to generalise the study's findings while also maintaining the required specialisation as per the multidimensional approach and industry factors. Therefore, this work has set the basis for the relevant measures of industry turbulence and munificence to be further investigated by future research in their moderating context towards the EO-performance linkage. Ultimately, to unfold the complex nature of EO affecting firm performance, research is urged to account for the environment also (see Rosenbusch et al., 2013).

Therefore, in contrast to previous scholarly works in the entrepreneurial theory, research question 3 examined OTE along the distinct industry conditions of turbulence and munificence that produced unique insights into EO. We found that, firstly, especially turbulence and munificence employee (stability and growth) figures had the greatest effect; thus, not only industry types matter as the EO-performance contingency appeared to align according to moderating effects of the OTE. Hence, instead of studying overall simplified measures, EO research is required to treat a construct within a specific context that must include (favourable or unfavourable) environmental dimensions. Secondly, examining the links of industry turbulence and munificence on the EO-performance relationships revealed mechanisms by which these environmental dimensions increased or lowered specific business performance indicators. Thus, performance also requires an individual assessment. Thirdly, the approached analyses advocate that both industry turbulence and munificence are distinct environmental dimensions that are, in disparity to previous literature, not combinable regarding their measurement. Within the following section, the temporal dimensionality of the EO-performance linkage will find further investigation.

6.4. Discussion of Findings pertaining to RQ4: Contributions from a Regression Analysis on the Contingency Relationship of EO with Performance under Temporal Considerations

Only a few studies on the multidimensional EO-performance linkage when accounting for temporal dimensionality have been conducted to date. This fact has been a long-standing and serious dilemma for the literature on EO because, in regard to time, possible causalities towards its impact on performance may have been misinterpreted. Table 2 (page 38) and Table 3 (page 40) on current research in the EO space illustrate this concern further. Only 3 out of 14 studies contain temporal or longitudinal approaches (Zahra, 1991; Zahra & Covin, 1995; and Matsuno, Mentzer, & Özsomer, 2002). Most of these particular studies have not tested the impact of EO in a strict sense as they were using cross-sectional data (Rauch et al., 2009). Within their conceptualisation, Lumpkin and Dess (1996) have already suggested that firms change and based on that, so does the nature of their EO. Yet, studies have almost routinely neglected this propensity for change. While this might be juxtaposed against arguments that EO as a firm orientation should exhibit temporal stability (Wales, 2016), Lumpkin and Dess' argument does not compete with this view but rather accepts that conditions may require or render EO to be malleable. Indeed, to blindly retain a level of EO regardless of circumstances (e.g., a set out in contingency theory) would seem inappropriate for organisational and strategic fitness. Hence, the time-driven evolvement of firm age, size, and other environmental factors may determine a firm's needs including its EO-performance relationship (Wales et al., 2011).

EO-performance outcomes were expected to require a certain time to be measurable (Lumpkin and Dess, 1996). Thus, research question 4 sought to ascertain whether EO set forth at one point in time may positively affect a firm's performance throughout three years. However, our results did not support this expectation as innovativeness was the only dimension having a two-year positive effect on the performance indicator of gross-profit-margin. Moreover, a negative effect for risk-taking on return on assets was further observed over a time span of two years. Accordingly, and in response to research question 4, this study's findings contribute to the theory and knowledge regarding EO theory in the following manner:

Firstly, conducting linear regression models for all EO multi-dimensions with the performance indicators of sales growth, gross-profit-margin, and return on assets allowed for assessing whether effects of EO will last longer than its initial time or investment period over a duration of three years (2013 to 2015).

(A) Empirical support was found to state that, within this study setting, a three-year effect could not be detected (empirical contribution to phenomena). However, a significant recurring impact was observed at two instances for a time-period of two years (positive effects of innovativeness on GPM and negative effects of risk-taking on ROA in 2013 and 2014). This aspect aligns with Zahra and Covin's (1995) findings on the existence of uncertainty in reference to the time horizon over which EO can reasonably be expected to yield effects on performance. While some scholars argued that this period would last for three (Fast, 1981), three to five (Von Hippel, 1977), or 2.7 to three years (Block and Subbanarasimha, 1989), this study was conducted approximately within the same range of three years. In this context, Zahra's (1991) exploratory study investigated the predictors and financial outcomes of corporate entrepreneurship. Zahra (1991) reasoned that firms might actively chase corporate entrepreneurship for causalities other than merely stimulating a performance increase. Wales (2016), moreover, was referring in this context to a firm's need of stable and recurring patterns of the individual dimensions to be entrepreneurially oriented. Such effects are to be examined in the long-term to distinguish the required time for an EO to pay off, to assess whether a causal chain exists among predictors, and to test plausible alternative hypotheses for firms to drive EO. What makes it even more perplexing is that longitudinal studies, time-based studies, or studies with a time component have not been followed since their findings nearly 25 years ago. Future research on extended time frames will lend support in determining such interactive links between firm EO and business performance (Zahra, 1991).

(B) Furthermore, considering the two instances where temporal effects were discovered, we observed that in the year of initiation (2012), similar significantly positive, and negative effects respectively, were measured (results compare well between the 10-K and LTS files). Concerning the time horizon of temporal studies in EO research, it can be concluded that time-to-profitability (see also Zahra and Covin 1995) is not predictable by employing a simple formula (empirical contribution to causal mechanisms). Resulting from earlier research questions, the EO-performance relationship is rather affected by a complex context-related setting of the firm and industry including the factor of time.

(C) The integration of time as a variable, as also stated by Zahra and Covin (1995), promotes a concern that serial correlations may exist among annual financial data (empirical contribution to levels of analysis) as suspected by the recurring effects of the EO multi-dimensions onto the performance measures (refer also to Wales, 2016). This asptect was mitigated by the employment of both file sources of 10-K and LTS that provided the basis for the generalisability of the discovered impact that EO has on firm performance over time. Thus, an assessment of time should become an obligation in EO research to sufficiently judge for the financial consequences of EO on performance (see also Zahra and Covin, 1995). Additionally, it was noted that the employment of shorter timeframes does not allow entrepreneurial activities to have impacted the firm and market conditions significantly enough to investigate for their actual consequences.

Secondly, a great body of scholars persist on the positive effects of the EO-performance linkage. Wiklund and Shepherd (2011) argued that for this matter that temporal/longitudinal tests are needed where EO is examined at one point in time while performance outcomes are assessed throughout later stages. To understand whether a firm’s EO is universally beneficial, superior knowledge of the EO's pervasiveness based on four main factors was required. This refers to (i) the evolving internal strategic requirements that may demand a more heterogeneous EO manifestation; (ii) internal strategic variation that is common within larger organisations (Galbraith & Kazanjian, 1986; Kazanjian & Drazin, 1987); (iii) the understanding that transformation and change are required to be considered as basis of competitive advantage in EO (Zahra, Sapienza, & Davidsson, 2006) and strategic management (Dooley, Fowler, & Miller, 1996); and lastly, (iv) the acknowledgement that firm performance might be related to its EO exhibition across vertical, horizontal, and especially temporal dimensions (at the firm level). Along with the discussions of earlier research questions (predominantly research question 2 and research question 3), here, additional support was found that EO *does not* have a generally positive effect on performance as claimed by other scholars (such as Rauch et al., 2009; Zahra, 1991; Zahra & Covin, 1995). Not even over time. Moreover, most studies in this space have not assessed for the effects of EO on performance in a strict sense as they have merely used cross-sectional data or have potentially been detecting the performance return because of large effects from a specific group of high performers in their data (Lumpkin & Dess, 1996; Rauch et al., 2009).

(A) While Zahra and Covin (1995) argued that EO has a positive effect on financial measures which tends to be modest over the first few years and increases over time, results of our sectional study, as already illustrated, reject this statement according to which positive and even negative effects of individual EO dimensions onto various performance measures were observed throughout the years (for innovativeness and risk-taking) (empirical contribution to modes of theorising).

(B) Furthermore, this study's findings do not support an increase of the EO-performance linkage (neither positive nor negative) over time as suggested by Zahra and Covin (1995) since the EO-performance impact did not rise consistently over the studied years (empirical contribution to modes of theorising). Entrepreneurial behaviour, when considering the whole picture within this study, is neither associated with generally positive nor superior firm performance but is rather associated with varying levels of the EO-performance linkage. This novel finding challenges the vast majority of studies that have been cross-sectional and have assumed that an EO's supposed performance effects then continue (or endure) over time.

(C) Next, Lumpkin et al.'s (2010) study on long-term orientation (LTO), regarded as propensity to disclose long-term implications and effects of actions and decisions that come to fruition after an extended period, discovered that LTO positively connects with innovativeness and proactiveness, however, negatively with risk-taking and competitive aggressiveness. While their paper assessed family firms only, here, this study detected similar results with innovativeness having a positive impact (GPM 2012, 2013, 2014), and autonomy (SG 2012; ROA 2013) and risk-taking (ROA 2012, 2013, 2014) having a negative effect on firm performance over a certain time period. Conclusively, the concept of the influence of EO on performance should not be regarded as a short-term corporate fix. Instead, it needs to be considered as a set of long-term strategic and entrepreneurial actions (in their level either high or low) that support firms in achieving superior performance (empirical contribution to causal mechanisms).

Therefore, entrepreneurially oriented firms are regarded as those that have recurring entrepreneurial behavioural patterns (Covin & Slevin, 1991; Wales, 2016). In a review piece, Wales (2016) argued that firms are required to combine sustained entrepreneurial behaviour with managerial decisions to deal with uncertain entrepreneurial actions over time (see also Covin & Lumpkin, 2011). Anderson et al. (2015) described this as temporal stability respectively as the required consistency in the entrepreneurial behaviour of firms over a certain period of time. Wales et al. (2011) concluded that a firm might experience sequenced periods of low (non-existence of entrepreneurial behaviour) and high levels of EO (existence of entrepreneurial behaviour) (also refer to Wales, 2016). Similar effects were observed along with this study's results since the EO multi-dimensions impact on firm performance varied over the years. Following the examinations of Covin and Slevin (1991), EO manifests through sustained entrepreneurial behaviour which qualifies it as an organisational state of a firm and not as an irregularity (Covin & Miller, 2014; Ireland et al., 2009). The limited quantity of time-based studies in EO research had challenged scholars to determine causal relationships between EO, its environmental and industrial contexts, and firm performance (Wales, 2016). Furthermore, Wales et al. (2011) have argued that the understanding of the why, how, and when firms potentially sequence their EO over time is yet to be examined. It was also Wales et al. (2011) who proposed that there are different contexts for firms; whereas EO may manifest consistently for some (EO continuous morphing manifestation), it may alternate between high and low levels of EO for others (EO sequencing wave manifestation). Consequently, various scholars urged future research for time-based approaches to receive more insights on the causality of varying impacting levels of the EO multi-dimensions onto business performance (Miller, 2011; Wales, 2016; Zahra et al., 2014).

Thirdly, as discussed throughout the previous research questions (research question 1 to 3), typically, only a few or combined indicators have been employed to operationalise firm performance whereas this study clearly indicates the need for various performance measures. This finding found empirical support within research question 4 on the variable of time as well (empirical contribution to constructs/variables), and was also noted by Lumpkin and Dess (1996) and Wiklund and Shepherd (2011) who proposed that a comprehensive model construction to investigate the effects of corporate EO on performance requires a multidimensional (performance) approach since some outcomes may be favourable to specific performance indicators but not to others (see also Lumpkin and Dess, 1996). Thus, we urge future research to operationalise firm performance as a catalogue of at least four measures of sales growth, market share, gross-profit-margin, and return on assets. The employment of temporal/longitudinal data sets, lagged variables, and panel data may support future research in addressing these causal linkages (Miller, 2011).

Concluding Comments on the Discussion of Findings pertaining to RQ4:

Conclusively, the small number of temporal studies in EO research as well as the outlined gaps on the causal relationships of EO with firm performance, under consideration of time, let us question whether the EO set forth at one point in time may positively affect a firm's performance over a period of three years. This study's findings did not support this expectation as innovativeness was the only dimension having a two-year positive effect on the performance indicator of gross-profit-margin.

Instead, evidence was found that EO tends to manifest through a consistency in entrepreneurial behaviour (Covin & Slevin, 1991; Miller, 2011) wherein it can, in fact, be conceptualised as a firm's pattern and not as an irregularity of actions (see also Covin & Miller, 2014; Ireland et al., 2009). Since only a limited number of scholars have researched EO on a time basis (see Rauch et al., 2009), the link between EO-performance relationships to evaluate whether a temporal effect exists, required further assessment for conclusive outcomes (Wales, 2016). Hence, Wiklund and Shepherd (2011) suggested the need for further methods to incorporate time, causality, and reciprocity as well as approaches that address temporal tests (Miller, 2011). A time-based approach to investigate the effects of the EO multi-dimensions onto the individual performance indicators has been introduced throughout this study (including the innovative computer-aided text analysis approach). It was discovered that EO has a two-year positive effect on gross-profit-margin (with respect to innovativeness) and a two-year negative effect on return on assets (concerning risk-taking). Furthermore, empirical support was found to substantiate that the EO-performance linkage is not a straightforward positive one (also under assessment of time) but is based on recurring entrepreneurial behavioural patterns.

Regarding future scholarly works on EO, literature has suggested that the age and size of a firm must be linked to its development state despite the fact that not every firm grows and intends to grow similarly; therefore, each may run through individual states of development processes (Wales, Monsen, & McKelvie, 2011). This aspect refers to an organisation's probable irregular and nonlinear internal development due to an unlimited quantity of states ('dynamic states') (Levie & Lichtenstein, 2010). Wales, Monsen, and McKelvie (2011) have provided greater details of current research on 'why' and 'how' EO may vary or evolve over time.

Firstly, when studying why EO may vary over time, research has reflected that every firm runs through dynamic states that reflect its condition of internal strengths, abilities, goals as well as its external environment (e.g. industry types and conditions) (Levie & Lichtenstein, 2010). This approach suggests, moreover, a firm's willingness to dynamically decide when and how it may adopt state changes while determining an internal and environmental fit (Miller, 1992). This perspective is similar to the previously discussed contingency approach as per which external threats and a maximisation of performance would be addressed by the optimal configuration set of structure, strategy, and environment (such as Short, Payne, & Ketchen, 2008). According to this, firms would be able to change states – herein the environmental or state setting may become obsolete – or to not change states – whereby they maintain the performance level – which may satisfy internal goals or lead to failure. When performing changes, each state may require a different set of managerial skills, priorities, and/or overall structural configurations (Flamholtz & Randle, 2012). Hence, by reflecting the dynamic states and configurational settings, each firm would have to change their strategic orientation over time as a result of the continuous learning outcomes based on internal and external experiences. This adpation ensures the securing of the state's fit towards its performance goals (Wiklund & Shepherd, 2005).

A firm's manifestation of EO may be reflected in its current dynamic state based on formalised systems, structures, and decision-making processes (Kazanjian, 1989). Referring to Wales, Monsen, and McKelvie (2011), young firms in particular do not have set traditional, and/or formalised structures in place, which would be an indicator for the high level of centralised decision-making and possibly the fast-entrepreneurial state changes taking place (Hanks, Watson, Jansen, & Chandler, 1993). Growing and established firms, on the other hand, may have numerous structures dealing with a higher number of employees (Kazanjian, 1989) which could hinder or quicken entrepreneurial state changes as well. Informal, organic structures and their relationship to EO may let a firm face issues as it changes states (Covin & Slevin, 1988; Green et al., 2008). Moreover, at certain times, when a firm decides on more formal structures to improve missing practices, systems, or its reputation, it becomes challenging to secure internal stability and control including the current set of EO manifestation (Hanks, Watson, Jansen, & Chandler, 1993). Thus, this relates back to Miller's (1983) call for an integration of firm types (industry types) and dynamic states into an EO-performance conceptualisation by advancing it through the temporal dimension.

Secondly, when studying how EO may vary over time, the development processes of a firm have been mentioned to be possible measurement indicators as well. These include acquisitions or hybrid and organic growth (McKelvie & Wiklund, 2010). While young firms incline towards organic growth strategies greatly projected by EO (McKelvie, Wiklund, & Davidsson, 2006), large and more established firms tend to develop through acquisitions not projected by EO but dependent on financial and managerial accessibility (see also Penrose's (1995) theory). Hence, Delmar, Davidsson, and Gartner (2003) have suggested that various organisational types would require, related to size and age, different compositions of resources and levels of EO. As per this, smaller firms may be more inclined towards proactiveness and competitive aggressiveness than their larger equivalents (Chen & Hambrick, 1995). This view can be extended to new firms with limited practices that may find it easier to address radical innovation (Christensen & Bower, 1996). Contrarily, the EO of established firms may be negatively influenced by acquisitions (e.g., product enhancement) within its innovativeness and risk-taking parameters (Hitt, Hoskisson, & Ireland, 1990). Moreover, mature firms tend to create and implement innovations that build on developed skills and experiences rather than creating new or other opportunities (Thornhill & Amit, 2003;

Wales, Monsen, & McKelvie, 2011). However, relying on patterns of comfort and former achievements could lead to failure (Miller & Chen, 1994). Ultimately, a firm's manifestation of EO may change with its development processes and growth strategies over time; thereby, each would require further consideration.

Research has offered three additional alternatives to a firm's varying EO manifestation over time. Firstly, as indicated before, not only firms but also industries may be driven by certain dynamisms with regards to EO that remain predominantly untested (see Table 2, page 38 and Table 3, page 40). Zahra and Wright (2012) have made a similar observation. "Controlling for the effects of industry dynamism, for example, is one thing, but looking into the sources of this dynamism and relating them to entrepreneurial activities can bring greater clarity about these relationships" (Zahra & Wright, 2011: 72). We have provided first indications on the moderating effects of industry turbulence and munificence with respect to the EO-performance linkage (refer to RQ3). Secondly, it has been argued that a state change may be a thoughtful and proactive strategic decision. For example, an EO manifestation of a single business unit may influence and evolve a bottom-up strategy based on a time-based change of the firm's overall strategic orientation (Stopford & Baden-Fuller, 1994). On the other hand, this would imply a firm's ability to transfer an EO manifestation top-down from an established entrepreneurial unit to a newly acquired business unit that may not have been entrepreneurial before (Bartlett & Ghoshal, 1993; Wales, Monsen, & McKelvie, 2011). Thirdly, a change in states may be planned by an organisation due to the firm or industry forces (Volberda et al., 2001) that would impact a firm's EO manifestation in the long-run (Bartlett & Ghoshal, 1993; Mosakowski, 1998). This effect is, for example, commonly observed in the high-tech industry where firms need to adapt to technical innovations (to keep their market share value high) that do not evolve internally but are developed by their competitors.

CHAPTER 7: CONCLUSION, IMPLICATIONS, LIMITATIONS, AND DIRECTIONS FOR FUTURE RESEARCH

The following chapter will present the conclusions of this thesis. This presentation includes the overall contributions to current research of EO pertaining to research question 1 through 4, implications for firms and top-level managers, limitations of this study, and recommendations and directions for future research.

7.1. Overall Contributions to Research of EO

Before summarising the overall contributions of this study to the current body of EO research, it is necessary to look into the past: Following the conceptualisations of Lumpkin and Dess (1996), the term of entrepreneurship was employed broadly in various contexts surrounding the questions of *"what makes a corporation entrepreneurial"* and *"when completes a firm being entrepreneurial".*

While including contingencies, certain firm-level strategies, processes, and environmental components tend to cluster. This effect is due to the need for a joint implementation with the configurational approach (Meyer et al., 1993; Miller, 2011; Wiklund & Shepherd, 2005). Recently, Covin and Lumpkin (2011), as well as Miller (2011) and Wales (2016), have suggested that both contingency and configurational theories will be highly relevant to future EO research. This need was also seen in Shirokova et al.'s (2016) recent work on EO by combining the contingency and configurational approach into one study to investigate external environment variables and the EO-performance linkage. Thus, here, evaluating the joint associations of an EO configuration and its contingencies to performance, moderated by industry characteristics, was considered to provide a fundamental extension to the current knowledge in EO research (also refer to Wiklund & Shepherd, 2005).

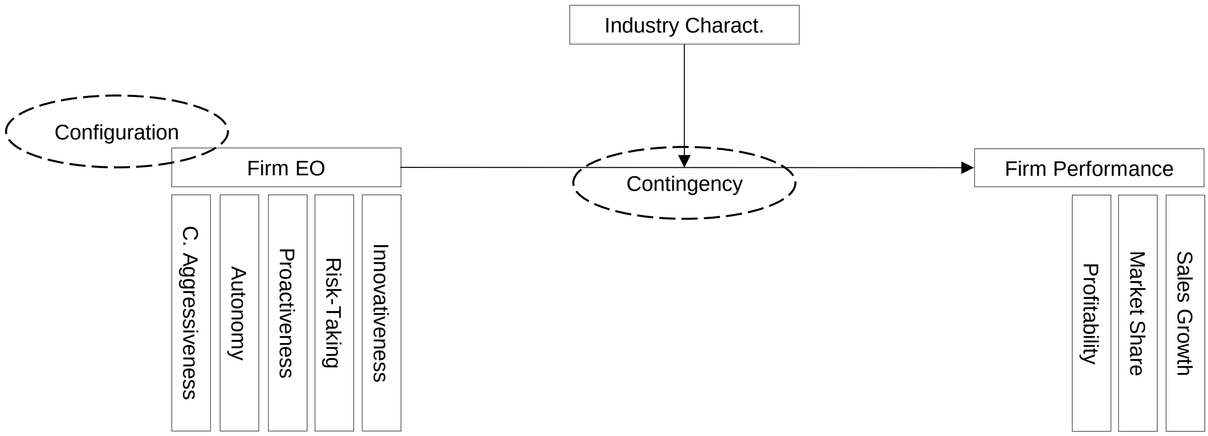


Figure 26: Overall Contributions to Current Research of EO: Contingency and Configurational Views

In reference to the initially identified research gaps (see section 2.10.2), Figure 26 displays a diagrammatic view on this thesis' applied framework by, firstly, addressing the configurational nature of an EO's multi-dimensions to answer the question around what is the ideal profile of EO in one industry type compared to another (RQ1) and by, secondly, considering contingencies to evaluate whether each EO dimension affects performance consistently across the industry types and the manner in which these are impacted by characteristics (RQ2, RQ3), while also considering EO under temporality (RQ4).

From the knowledge gained through this study, regarding *"what makes a firm entrepreneurial"*, we have found evidence that any firm participating in a fruitful combination of innovativeness, risk-taking, proactiveness, autonomy, and competitive aggressiveness is entrepreneurial to a certain extent (see also Lumpkin and Dess, 1996). Lumpkin and Dess (1996) argued that EO, as an outcome of organisational processes and decision making, allows a firm to participate in the market competitively and strategically to reposition itself internally. The relevance of this argument was not only intended for firms within the start-up stage, but also for firms that have attained a certain level of maturity within their respective domains. However, throughout this research, it was established that a comprehensive investigation of a firm's EO requires much more than an examination of its internal processes. This aspect was the focus of many previous scholarly works on EO (see Rauch et al., 2009). Based on this study, it is now evidenced that to understand “what makes a firm entrepreneurial”, an assessment of both firm configuration and contingency matters from an industry type and industry conditions viewpoint is fundamental for a comprehensive research outcome on the EO-performance linkage (referring to RQ1 through RQ3).

Referring to *“when completes a firm being entrepreneurial”* (respectively, time for EO to be measurable): A company’s management decides itself to preserve EO and its levels throughout the firm’s lifespan. Nevertheless, initially, Lumpkin and Dess (1996) argued that if employees of a company act exceedingly passive, avoid undertaking risks, or reject the encouragement of innovative behaviour to explore new opportunities, the danger of losing the firm’s entrepreneurial power increases. It was Covin and Slevin (1990), and Miller (1983) who first proposed that companies can also be too entrepreneurial owing to excessive risk-taking or exceptionally high R&D outlays that do not match the current market or competitor situations. As a result of this study, we have evidenced that a comprehensive framework of the relationships between EO and performance should assess an EO’s duration of affecting such firm performance outcomes. We have referred to this as a mandatory temporal consideration of EO (RQ4).

Conclusively, an EO-performance construct and assessment should characterise a firm’s complete process perspective of entrepreneurship. Referring to this study’s context, this includes: (i) ideal configurational profiles of EO, the contingency of EO towards firm performance under consideration of (ii) specific industry types and (iii) conditions, and (iv) temporal aspects of EO impacting performance. The following sections will outline this study’s overall contributions to EO research concerning questions 1 through 4 and the study approach of computer-aided text analysis (CATA). For the complete list of contributions within this thesis to the scholarly literature on EO, refer to chapter 6 of discussion.

7.1.1. Overall Contributions pertaining to RQ1: Configurational Theory and Ideal Profiles

Relating to research question 1, linking the configurational ideal profile approach (of EO and performance) and the impact of its deviation to the context of the industry types of high-tech versus less-tech intensive firms: The study found that EO is associated with high performance in the set of ideal profile firms whereas deviance is associated with mediocre performance in the remaining group. Inconsistencies in the EO-performance linkage, therefore, are driven by a poor configuration of the EO multi-dimensions. Furthermore, it was examined to what extent the configuration of EO dimensions associated with optimal performance remains the same across both the industry types. Here, it was discovered that the ideal profiles do not differ across the industry types of high-tech and less-tech.

Previous research on EO has predominantly studied it as a unidimensional concept. In contrast, throughout this study, EO has been assessed according to its five independent dimensions as initially conceptualised by Lumpkin and Dess (1996) (see also Hughes & Morgan, 2007) in combination with ideal configurations. Concerning configurational theory within the studied context of industry types, this study contributes to the current body of literature that EO is, in fact, not a single collective term (Covin & Lumpkin, 2011). Instead, it is to be explored on an individual basis according to its multi-dimensions. Moreover, this study also improves the general understanding of EO in contrast to the initial expectations based on the literature review. We now know that an enterprise's ideal EO profile does not differ regarding HT and LT firms. Yet, the environmental context is not to be underestimated.

As outlined by Covin and Lumpkin (2011), for theorists that follow a multidimensional conceptualisation approach of EO, it is challenging to define a collective meaning behind individual dimensional measures and their results. An answer to this was provisioned by the employment of the configurational approach that enables the adoption of a multidimensional

EO, mapping it to this study's motivation (see also Miller, 2011). Therefore, configurational testing is a comprehensive tool in supporting an understanding of why and how an EO may impact business performance, moreover, in illustrating the inconsistencies in the EO-performance linkage (Hughes & Morgan, 2007; Hughes et al., 2017). Even though additional work will be required to investigate further the inconsistent findings of configurational study's (Hughes & Morgan, 2007) (see section 7.4), this thesis offers an initial guideline into this path of research, especially when considering the critical context of the high- and less-tech industry types (a further break down into more detailed NAICS codes is recommended) as well as the employment of CATA.

7.1.2. Overall Contributions pertaining to RQ2: EO Multi-Dimensions Contingency Impact towards Performance

Relating to research question 2, investigating the varying impact of the five dimensions of EO onto firm performance considering the two industry types of high-tech and less-tech: Specifically, in this framework, the five EO dimensions were treated individually along with the distinct performance measures of sales growth, market share, gross-profit-margin, and return on assets. Within the context of this study, it was found that EO is, in fact, recommended to be considered a multi-dimensional construct comprising of five dimensions since each has a positive or negative impact on individual performance measures (here, these have been presented under consideration of the contingency approach). However, such a linkage generally does not differ based on the industry types of high-tech and less-tech (except two dimensions related to the market share measure).

It was Miller (1983) who initially conceptualised EO as a set of composite dimensions, followed by Covin and Slevin (1989) who described it subsequently as a unidimensional construct. Lumpkin and Dess (1996) were among the first to design EO within a multidimensional paradigm. Kreiser et al. (2002) assessed whether the three sub-dimensions as described in the Miller and Covin & Slevin scale “must” or only “may” vary independently of each other (see also Covin & Lumpkin, 2011). The further question of the number of dimensions evidenced to be caused by the outcomes of research efforts (Covin & Lumpkin, 2011); accordingly, the matter of dimensionality is to be considered as a theoretical and not an empirical one. Covin and Lumpkin (2001) argued that, therefore, an EO could be conceptualised as either a uni- or multidimensional construct mainly driven by the approach of the data analysis (also refer to Schueler et al., 2018). As a consequence, empirical findings will only be able to explore the extent to which a study’s measures can be associated with a specific context (Covin & Lumpkin, 2011). Therefore, the question of the quantity of EO dimensions is a different one to what EO actually is (in contradiction to Wales, 2016). Resulting from the findings of this study, we agree with this statement in terms of the tested multidimensional approach.

Previously, literature has not sought to differentiate the utility, usefulness, or value of EO across industry types but the language of EO was said to general favour high tech situations (see Rauch et al., 2009). It was noted by Choi and Williams (2016) that technology action provides firms with the potential to create superior products as compared to competitors; however, this is not an assurance to outperform rivals. This leads to two problems. The first is whether it is at all relevant in low tech scenarios and, second, whether EO has a consistent effect, especially regarding its dimensions. Considering the context of this thesis, we have examined the structure of utilised data to be able to substantiate a conceptualisation of EO being a multidimensional construct comprising of, at least, five assessed dimensions in the contingency setting. Support was found to state that external characteristics affect the EO-performance relationship to a certain extent. However, this research provides the current theory with the missing piece of empirical evidence, stating that this linkage does not vary in comparison to both industry types of high-tech and less-tech.

Along with the multidimensional approach of EO, this study sought to assess whether each dimension was equally valuable in ensuring superior firm performance. Since this research’s findings display that an overall exertion of all EO dimensions does not always positively affect performance, it can be concluded and contributed to current knowledge of EO that a higher level of EO dimensions does not automatically result in increased firm performance which contradicts a majority of previous papers on EO (refer to Rauch et al., 2009 and Shirokova et al., 2016). This contradiction has been evidenced on the basis of a significantly larger sample than has been seen in previous scholarly works. Moreover, by applying all analyses across the two sample sources of 10-K and LTS, we display the comparability of study results. In addition to further methodological advantages of this research, we have enlarged existing databases of frequently used terms per dimensions by sufficient approaches as compared to Short et al. (2009).

Moreover, it was noted that the EO dimensions under multidimensionality *must* vary independently. Hence, as already derived by Hughes and Morgan (2007) (and also Hughes et al., 2017), the linkage of EO and performance appears to be more complicated than often depicted since an overall studied EO has an only little direct impact on firm performance. This observation calls to question the persistence of previous literature with respect to the unidimensional approach. Conclusively, this research contributes to existent scholarly works on EO by mapping the industry type perspective to the EO-performance contingency. Furthermore, empirical evidence is provided that the studied linkage also requires performance to be assessed according to its various indicators and not as an overall measure.

7.1.3. Overall Contributions pertaining to RQ3: Impact of the External Environment on the EO-Performance Relationship

Relating to research question 3, studying the moderating role of industry turbulence and munificence in the context of the EO-performance relationship: Both industry turbulence and munificence were construed as being moderators concerning the EO-performance linkage while assessing performance through its parameters. It was discovered that industry turbulence regarding sales stability positively and regarding employee stability negatively moderates the EO-performance linkage for the performance indicator of market share. For industry munificence, characterised by employee growth, a negatively moderating effect on the EO-performance relationship was observed for the performance indicator of market share. Thus, various variables are considered to be central environmental influencers towards the EO-firm performance linkage with regards market share. Even so, for the remaining performance indicators defined within this thesis, no such effect was observed.

Scholarly works on EO should include a firm's environmental contexts (which result in the exposition of EO) as well as the moderating effects of environmental conditions on the EO-firm performance linkage (Covin & Lumpkin, 2011). Till date, little is known about the environmental triggers of EO and its moderating impacts towards the studied contingency (see Covin & Lumpkin, 2011). Moreover, the environment has repeatedly been treated very generically as a control variable and not as a moderating variable (see Rauch et al., 2009). Based on this study, it can be observed that such a categorisation is inadequate since support was found that industry turbulence and munificence have varying effects on the studied linkage (positive versus negative impacts). Therefore, this thesis contributes to the current body of EO literature by bringing environmental conditions of industry turbulence and munificence in relation to the studied contingency. These innovative research outcomes support the current understanding of EO, enabling this study's approach to be used as a helpful operational guideline for categorising the organisational task environment (OTE) concerning both industry conditions. Future research may integrate the described approach not only to the contingency but also to the configurational theory (Covin & Lumkpin, 2011).

7.1.4. Overall Contributions pertaining to RQ4: Temporal Considerations of the EO-Performance Relationship

Relating to research question 4, examining the long-term impact of EO onto the defined distinct performance measures throughout three years: Innovativeness was the sole dimension that positively affected the performance indicator of gross-profit-margin over a period of two (not three) years. Moreover, risk-taking was also found to have an adverse effect on return on assets over a span of two years. Entrepreneurial Orientation, when considering the whole picture within this study, was neither linked with generally positive nor superior firm performance but was instead associated with varying levels of the EO-performance relationship over time.

Only a few studies on the EO-performance linkage when accounting for temporal dimensionality exist till date. This aspect has been a long-standing and severe dilemma for the literature on EO because, based on time, possible causalities towards its impact on performance may have been misinterpreted. Most of these particular studies have not tested the impact of EO in a strict sense as they employed cross-sectional data (Rauch et al., 2009) or were measuring EO and performance in the same year (such as Hughes et al., 2017). In contrast, within this study, it has been understood that EO outcomes require a particular time to be measurable. Within their conceptualisation, Lumpkin and Dess (1996) have already suggested that firms change, and based on that, so does the nature of their EO. However, studies have almost routinely neglected this propensity for change. While this juxtaposes against the arguments that EO as a firm orientation should exhibit temporal stability (Wales, 2016), Lumpkin and Dess' argument does not compete with this view but rather accepts that conditions may require or render EO to be malleable. Indeed, to blindly retain a level of EO regardless of circumstances (e.g., as set out in contingency theory) would seem inappropriate for organisational and strategic fitness. Hence, the time-driven evolvement of firm age, size, and other environmental factors allowed us to determine a firm's requirements for a successful

EO-performance relationship. This study contributes to current scholarly works on EO by outlining a research approach for temporal dimensionality and by displaying a line of argument for the various dimensions impacting different firm performance outcomes individually either positively or negatively over time. Ultimately, a generally positive impact of EO on firm performance, as presented by a broad number of studies in the past, was not confirmed (refer to Rauch et al., 2009).

7.1.5. Overall Contributions from the use of Computer-Aided Text Analysis (CATA)

Ultimately, this study employs the relatively new research approach of computer-aided text analysis (CATA) to measure firm-level EO. This form of content analysis enables the measurement of constructs by examining texts based on quantitative databases on the frequency of words: For this, two data sources of firm-published papers were considered. Letters to shareholders (LTS) that have been employed in single previous EO studies and 10-K filings that have not been applied in this specific context as yet. Here, both file sources of LTS and 10-K were analysed for all corresponding research questions simultaneously (as they have diverse target audiences) to document in detail where the results compare well and where differences were observed between the two file sources. The consideration of both LTS and 10-K was not a part of the hypotheses testing. However, it was a vital factor for providing new insights into firm-level EO due to the herein preserved executive narratives. Thus, assessing LTS and 10-K files throughout this research set an initial stage of an exploratory investigation on the broader issue of examining the different file sources relevant for firm-level EO research (including their expected varying results).

CATA as the primary EO measurement approach (objective analysis) was selected due to its many advantages. It limits errors from human coding while a variety of texts can be examined within seconds, ensuring seamless reliability (Short et al., 2009 and McKenny et al., 2016).

For the comprehensive list of CATA benefits over all other research methodologies refer to section 4.5 on its data validity and reliability as an EO measure. This study is one of the first to apply CATA to all five multi-dimensions of EO (see Covin & Wales, 2018). Thus, this thesis contributes to current research on EO, including the broader scholarly works on the entrepreneurship theory, by defining novel and inclusive procedures pertaining to various aspects, from the sample selection and classification to the point of measurement implications and the actual data collection approach (methodological contribution). These processes may limit the concerns raised by previous scholarly works, such as the comparability of study results across both employed file sources of 10-K and LTS (Short et al., 2009). As stated by Short et al. (2009), many assessments on the EO-performance linkage have been ambiguous in their results (such as Smart & Conant, 1994 or Zahra & Covin, 1995; see also Rauch et al., 2009) while a variety of them have mainly used subjective measurement approaches of EO (Naldi, Nordqvist, Sjöberg, & Wiklund, 2007) whose employment is debatable within this practice (Short et al., 2009). The context-sensibility, following this objective study, disregards such concerns since the examination of individual business performance indicators via COMPUSTAT and of EO dimensional measures via CATA offers an enhancement over all scholarly works that have tested the studied matter by survey analyses (see also Short et al., 2009).

7.2. Implications for Firms and Top-Level Managers

The following sections will outline comprehensive suggestions for firms and managers as derived from this research.

7.2.1. Implications for Firms and Top-Level Managers pertaining to: Configurational Theory and Ideal Profiles

Considering the gained knowledge on the ideal profile configuration of EO multi-dimensions, this thesis recommends the following implications to firms and top-level managers:

Firstly, this scholarly work supports the importance for researchers and managers in practice to not solely focus on the direct interaction of EO with performance; it is instead required to acknowledge a more holistic view on the effects surrounding the EO-performance linkage. This view includes configurational as well as contingency perspectives. Throughout the assessment of this thesis, statistical evidence on such three-way effects was found that makes it essential for managers to consider a firm's configurations (its ideal configurations respectively) within the top-level decision-making processes. A similar observation was noted by Wiklund and Shepherd (2005), who, in turn, proposed an examination that goes beyond a configurational approach into more dimensions of possible interactions, including environmental and temporal ones. This thesis strongly supports this direction.

Secondly, this research provides evidence that configurations of EO dimensions may have a positive impact on firm performance preconditioned these have been configured as "ideal", even though it was discovered that these profiles *do not* differ across the two industry types of high-tech and less-tech. Since the EO-performance linkage is not always a straightforward one, managers are asked to locate the dimensions' weaknesses by defining their unique EO-dimensional scores within a firm. Hence, it needs to be understood that there is a potential variability across EO that requires different managerial activities targeted to different dimensions. This understanding will allow top-level managers to determine the dimensions' fit to the ideal benchmark profiles. Furthermore, it will support in outlining the actions that are needed for securing superior business performance in the long run. As ideal profiles statistically do not differ between HT and LT industry types, these do not need to be modified across markets but ought to work towards an overall ideal. Therefore, this thesis' study measures and method can help managers to audit their firm's EO and position it relative to the ideal.

This research has provided firm management with a straightforward guideline on calculating deviation scores per dimension. This guideline will allow for assessing the various firm-specific variables of its EO configurations and how requirements are to be implemented to fit a company's business strategy. In addition to that, Vorhies and Morgan (2003) have defined four critical stages of benchmarking for top-level management to review their strategies: (i) Firms or groups within firms with superior business performance are to be categorised. (ii) Business processes or characteristics are to be adjusted. This aspect is intended to be the essential strategy to define the actual benchmark. (iii) Gaps to the ideal benchmark are to be classified. (iv) Gap-closing advancement strategies are to be developed and implemented to reduce and ideally close the gap towards the benchmark. Strategies (i) through (iii) are similar to the methods outlined in this thesis for the identification of the profile deviation scores as described along with section 5.2. These activities will allow a firm and top-level management to examine the linkage between superior business processes or characteristics towards superior firm performance to implement such processes and characteristics that are considered superior.

Thirdly, since this study and its findings support a multi-dimensional conceptualisation of EO within this research context, it is recommended that managers assess and adapt their levels of EO on the basis of an individual dimension and not via an overarching EO procedure. Management is asked to revise the firm's EO capabilities and audit whether these distribute value. For example, by revising policies and procedures grounded on value analysis, a firm will be able to determine resources dedicated to unjustified and improper EO activities (Hughes & Morgan, 2007). By benchmarking each dimension independently, specific weaknesses in their configurations can be detected and targeted through strategic actions. While only some or all EO dimensions may be implemented or audited, management should lay additional emphasis on the most useful dimensions to reduce resource inefficiencies. Appropriate techniques may include (i) environmental scanning practices to learn about events and trends in the company's external environment, (ii) market signal detection and identification of opportunities versus threats to raise the awareness of all employees, (iii) promotion of creativity while encouraging individuals to solve market issues in innovative ways, and (iv) investment in human capital to build the firm as a whole in order to respond to market needs (Hughes & Morgan, 2007). Thus, this thesis encourages the necessity of advanced management awareness on a strategical level.

However, while EO dimensions are suggested to be modified individually, top-level management is still urged to adjust these concerning one another and to regularly assess the overall outcome of these adjustments pertaining to not only single EO dimensions but to the overall level of EO configurations. Furthermore, EO, whether uni- or multidimensional, should not be assessed as a stand-alone phenomenon. Earlier we stated that firm-level management is requested to consider also the firm's contexts – including environmental and temporal aspects – in relation with EO to define outlines on attaining superior business performance. This aspect may not only be relevant for the contingency but also for the configuration theory.

Fourthly, before the actual implementation of initiatives on benchmarking the profiles of EO, top-level management is encouraged to perform reasonable diagnostics to balance potential risks in comparison to possible beneficial outcomes (see also Hughes et al., 2007). Additionally, such verifications allow for assessing whether poorer performance is actually caused by a misfit regarding the EO levels or whether this may be caused by other effects as raised within this research, such as environmental or temporal ones. Furthermore, internal processes and employee behaviour may also have an impact on performance that would require consideration before an adjustment of EO dimensions according to the ideal is initiated. This aspect refers to the open gap in EO research on the possibility of EO being driven by a vertical dimensionality as well (refer to section 2.2.3). Ultimately, a firm's management is urged to perform these diagnostics on a regular basis to assess the efficiency of already performed initiatives to lift EO dimensions to an ideal while also baselining the forces that drive EO within the firm-specific context. Moreover, it is to be acknowledged that corrections of EO dimensions towards an ideal benchmark are only one of many tasks within a successful upper management system targeting superior business performance improvements.

7.2.2. Implications for Firms and Top-Level Managers pertaining to: EO Multi-Dimensions Contingency Impact towards Performance

Considering the EO multi-dimensions contingency impact towards business performance, this thesis recommends the following implications to firms and top-level managers:

Firstly, these study's findings advocate that an implementation of EO dimensions is less a purely strategic choice; instead entrepreneurial activities are to be planned and executed according to the firm's context-related setting of EO. This perspective also includes the notion of not all EO dimensions being beneficial towards firm performance. Thus, a strategic and selected set of activities targeting specific dimensions may lead, implemented correctly, to superior business performance.

Due to the application of a multidimensional EO approach across this study, the following recommendations, as substantiated along with the investigations of the configurational theory, are applicable for the contingency theory as well. These include the following implications: This scholarly work supports the importance for researchers and managers in practice not solely to focus on the direct interaction of EO with performance, it is instead required to acknowledge a more holistic view on the effects surrounding the EO-performance linkage. It is recommended that managers assess and adapt their levels of EO on an individual basis and not via an overarching EO procedure (multidimensional perspective). Top-level management is endorsed to perform reasonable and regular diagnostics to balance potential risks of these in comparison to possible beneficial outcomes.

Secondly, in addition to previous implications, it is to be noted that the task of managing entrepreneurial activities within an organisation is an ongoing process. Research has presented a variety of descriptive and normative models whereas top-level management is challenged on their selection. This due to the models' different prerequisites and implications regarding personal, organisational, or market goals, needs, and characteristics. Miller et al. (2011) summarised these models that each offers its level of managerial challenges: The Continuous Morphing Model promotes a supportive working culture by categorising change as a positive instead of a negative opportunity and by building a common vision which provisions internal stability while latent risks may occur (Wales et al., 2011). Thus, the workforce will be enabled to handle continuous change. Next, according to the Ambidextrous Model, pertaining to corporations consisting of various divisions with different market offerings, the management is asked to align the level of the individual EO dimensions and required resources according to certain business units and areas (Wales et al., 2011). This theory surpasses the scope of this research, engaging in a more vertical and horizontal assessment of EO (refer to the literature review sections 2.2.3 on EO's vertical dimensionality and section 2.2.4 on EO's horizontal dimensionality). However, it will enable managers to build entrepreneurial strengths for the organisation or the organisational units respectively. Finally, the Cyclical Wave Model suggests for the top-level management to realign human and physical assets between phase changes of high and low levels of EO as opposed to the rather conventional strategic orientations. This realignment would refocus organisational resources according to the current needs of the firm (Wales et al., 2011 and William and Lee, 2009 on the three types of entrepreneurial stance). This aspect relates to the temporal dimensionality of EO (refer to section 2.2.5 on an EO's temporal dimensionality) and its stability and instability. Conclusively, management of EO activities should be an ongoing strategical engagement and not a one-time task.

Thirdly, in multiple instances of this thesis, we have encouraged performance to be assessed according to its measures of sales growth, market share, gross-profit-margin, and return on assets. Similar to the multi-dimensions of EO, a firm's management is asked to consider performance according to these individual measures as well since the different effects of EO dimensions on the performance measures were observed. Furthermore, top-level management of individual firms may have defined their own key metrics for measuring a firm's business performance outcomes and year-over-year success increase. These may include financial but also non-financial performance metrics. Refer to section 2.4.3.2 on a potential selection of these ("Considerations When Measuring Performance").

7.2.3. Implications for Firms and Top-Level Managers pertaining to: Impact of the External Environment on the EO-Performance Relationship

Considering the moderating impact of the environmental context (industry turbulence and munificence) on the EO-performance linkage, this thesis recommends the following implications to firms and top-level managers. For implications concerning the multidimensionality of EO, please refer to the previous two sections.

Firstly, this study's findings support the early concerns raised by Zahra and Covin (1995) according to which the environmental context of a firm has a continuous and robust effect on the success of a company's entrepreneurial behaviour. Industry impacts have been recognised as a cause of ambiguous interpretation if research only controls for them, especially in large corporations that may target different industries (Harris, 2004; Rauch et al., 2009). This encourages management to gain the awareness needed to not only consider internal settings of the firm but also acknowledge and involve environmental driven conditions into the decision-making processes such as sales and employee stability (industry turbulence) and employee growth (industry munificence) that were displayed to have positive and/or negative effects on the EO-performance linkage (such as for market share). As varying effects of industry turbulence and munificence were observed, managers are recommended to examine these two aspects as separate from one another according to this thesis' methodology. Therefore, the proposed model will aid managers in investigating how to benefit from specific environmental opportunities and how to mitigate corresponding threats.

Secondly, management is urged to understand how EO can be employed as a successful approach to bypass any threats that are driven by an industry's turbulence and munificence. Being located in a specific market, firms will experience that other companies have to deal with similar industry constraints as well. These constraints may include restricted capital access or specific environmental contexts with little to no chance of raising new opportunities (see also Wiklund & Shepherd, 2005). Knowing that various dimensions impact the performance indicators differently, top-level management is required to define their entrepreneurial activities according to the industry turbulence and munificence situations. This definition will allow them to benefit from individually adjusted dimensions and to differentiate themselves from competitors and outpace rivals. Ultimately, it aids in defining strategic entrepreneurial activities (on a multidimensional level) to secure superior firm performance.

7.2.4. Implications for Firms and Top-Level Managers pertaining to: Temporal Considerations of the EO-Performance Relationship

Concerning the temporal considerations of the EO-performance linkage, this thesis recommends the following implications to firms and top-level managers. For implications related to the multidimensionality of EO, please refer to the first two sections (section 7.2.1 and 7.2.2).

Firstly, in addition to the managers' requirement to reflect EO according to its various multi-dimensions in the specific context of the firm, these are suggested to also audit the long-term perspectives in the building, maintaining, and assessing of a firm's EO. Similar to the previously stated implications, top-level management is urged to consider EO as well as performance measures according to its dimensions since for GPM, EO is displayed to have a two-year positive effect (with innovativeness) while for ROA, EO showed to a two-year negative effect (with risk-taking). To entirely build upon the most useful outcomes of firm adjustments on EO, managers have to be eager and have to be able to sustain their ongoing implementations of specific EO activities over the duration of at least two years. Thus, when this mandatory evolvement-time of EO activities is ignored by the management, such initiatives may be obsolete long before the financial benefits for the firm would be measurable.

Secondly, while considering the temporal effectiveness of EO, a firm's management has to acknowledge that an EO strategy will be driven by many internal and external factors additionally, known as a firm's context. We have discussed a selection of these factors previously, such as the industry conditions of turbulence and munificence. The outcomes of an EO strategy are to be assessed to verify whether such strategy is to be continued (due to favourable outcomes), modified (due to mixed but modifiable outcomes), or discontinued (due to adverse or new targeted outcomes). Ireland et al. (2009) have described plausible strategic elements as defining an entrepreneurial strategic vision, a pro-entrepreneurship organisational architecture, and the entrepreneurial processes and behaviour as exhibited within the firm. While we have outlined the required temporal considerations of firm activities surrounding EO, managers will also be able to vary their degrees of intensities throughout the lifetime of an EO strategy. However, these cannot be easily and consciously chosen and rapidly enacted as more than a single decision, act, or event is involved (refer to Ireland et al., 2009). EO strategies are to be aligned according to the firm's vision and the following entrepreneurial initiatives throughout the firm (Ireland et al., 2009). Thus, ultimately, an EO strategy cannot be regarded as a one-time standalone task performed in a specific silo of the firm. Instead, management is required to implement such a strategy according to various elements over a duration of multiple years (at least two) to receive a measurable effect of superior business performance.

7.3. Limitations of this Study

Multiple useful contributions to EO research and implications for managers have been presented throughout the previous sections. The following segment will outline the limitations of this scholarly work from trade-offs in the selected methodological design.

7.3.1. Limitations of this Study from the use of Computer-Aided Text Analysis (CATA)

Due to its many advantages, CATA has been a reliable substitute to manual content analysis as well as survey research since the assessment of single words in firm published texts aids in measuring a theoretical construct in perhaps a more natural way. Yet, it is essential to consider its limitations.

Firstly, CATA encounters some compromises when compared to human coding analysis. Human coders may be more context sensitive when distinguishing the meaning of specific words within sentences (Short et al., 2009). Nevertheless, in a study by Rosenberg et al. (1990), it was presented that human coders were outpaced by an applied CATA approach. Hence, the advantages of CATA must be seen in comparison to other study methods. These advantages include the near-perfect reliability as well as the capability to analyse a large number of texts in a matter of seconds. Other research approaches will not allow for analysing the required texts of all S&P 500 firms within such a short timeframe.

Secondly, computer-aided text analysis may be less sensitive when examining for the temporal dimensionality of words (see Short et al., 2009), such as for the impact of autonomy on performance. The usage of words within the LTS and 10-K file sources according to this EO dimension could be meant as previous, current, or future activities of a firm. Thus, complementing CATA with human coding may aid in outlining whether these discrepancies in the temporal meaning of words actually exist. Moreover, adding other types of validity may strengthen and enhance here performed assessments. An example of this would be the convergent validity (Short et al., 2009), a correlation examination of two measures of the identical construct. This test could be utilised to compare the study results of the content analysis, especially concerning EO, with conventional, more validated research instruments such as surveys (Short et al., 2009).

Next, CATA can be sensitive to impressions management (McKenny et al., 2016; McKenny et al., 2013). While 10-K files are following a more standardised content procedure with specific guidelines for filling the form, the LTS files are primarily targeted to shape the understanding of the reader, here the impressions of the shareholders, in favour of the firm. The writers of such texts may not communicate firm challenges openly. Hence, internal obstacles such as inappropriate workplace behaviours may be more precisely measured by interviews or surveys than by content analysis of the LTS files (see also McKenny et al., 2016). Furthermore, one might argue that CATA merely measures verbiage (Covin & Wales, 2018), and not actual behaviour, even though EO has primarily been described as a behavioural concept (refer to Covin & Lumpkin, 2011). However, from our results, we found that content analysis supports in the examination of entrepreneurship by LTS and 10-K files according to its strategic posture. As this is fundamentally similar to EO due to the identical dimensions, CATA is capable of operationalising and measuring the multi-dimensions of EO.

Fourthly, a researcher's collection of firm-published files is essential to perform a text analysis (Short et al., 2009). The same file sources can be employed to complete multiple studies for different theoretical constructs (see McKenny et al., 2016). The gathering of such files is relatively time-consuming; therefore, scholars may be interested in keeping these texts private. Banks et al. (2016) stated that for research transparency and as a prerequisite for many journal corporations, it is vital to make these data accessible upon demand. In this regard, Banks et al. (2016) have outlined two strategies built on the American Psychological Association's code of sharing scholarly data (Ethics Code Standard 8.14a). (i) Any files employed for CATA in published papers should be stored and shared upon request for validation except the author being legally or ethically restricted from doing so. (ii) A recipient of collected files should employ these only to verify the analysis in question; sharing of or conducting their own analysis with the received files should require permission of the author prior to their use. Ultimately, this will aid other researchers to justify the study results received through content analysis (secured within this study by applying two data sources for the CATA analysis).

7.3.2. Further Limitations of this Study regarding the Conceptual Model

Firstly, this thesis was seeking to research the impact of firm EO in a certain year on the business performance indicators in the following years. Rauch et al. (2009), Miller (2011), Zahra et al. (2014), and other scholars have recently referred to this as the need of longitudinal studies within EO theory to being able to answer the question around the causality of the EO-performance linkage. Throughout this study, a first innovative step in this direction was taken since we have evidenced that an EO's impact on performance requires a specific lead-time to be measurable within the firm, defined as the temporal dimensionality of EO. Since EO is perceived by ongoing managerial-driven activities, future research may measure and analyse not only performance but also firm EO throughout multiple years as it may derive additional conclusions from the ones outlined here. Moreover, a longer timeframe of measuring firm performance for more than three years may find consideration to verify how the EO-performance linkage evolves further. Definitions on the appropriate methodological approaches will need to be outlined.

These definitions, furthermore, include the suggestion made by Wiklund and Shepherd (2005) to increase the time gaps between the independent and dependent variable to examine whether this task may strengthen a model's explanatory ability. Initial evidence for this line of argument was found by Zahra (1991) and Wiklund (1999) according to which an association between EO and performance was higher with a two-year leg as compared to a one-year leg. Throughout this study, we have studied a one-year leg. By adding above aspects, a research could be expanded from a temporal assessment to a more complex longitudinal one. A content analysis offers greater and easier options to implement such research design as it would be possible through a conventional survey approach. Furthermore, it is to be acknowledged that we have measured the construct in a specific time span which leads to the assumption that the results may not be generalised across time for later years. Whether our findings replicate within later years is to be evaluated by upcoming scholars.

Secondly, as stated previously, EO may pay off not only in the form of financial but also non-financial outcomes of business performance. This observation relates to Lumpkin and Dess' (1996) initial concern that the effects of EO and its dimensions may vary based on alternative measures of performance. For a full list, refer to section 2.4.3.2. Such alternative indicators have not been studied within this research (this may include both financial as well as non-financial measures).

Next, we have argued that the EO-performance linkage may be affected by many of the firms' internal as well as external contextual settings. Thus, it is to be noted that the EO-performance contingency may be the outcome of other variables that have not been assessed within this research (refer to Zahra & Covin, 1995). This aspect may include the raised need for research to also consider internal EO in addition to a firm-level EO perception. The progress of current research on this was reviewed along with the section 2.2.3 on the vertical and section 2.2.4 on the horizontal dimensionality of EO. Moreover, as stated by Rauch et al. (2009) already, firm size and industry were assumed to be relatively large impactors towards the linkage of EO with business performance. While we have made a first attempt in outlining additional moderators such as industry turbulence and munificence, other essential moderators on this contingency may require exploration. This may include not only objective but also subjective measures. Furthermore, it could be assumed that the measures of the industry conditions of this thesis may correlate to the studied performance indicators. This possible limitation was tested and has displayed to not be of relevance for this study's setting.

Fourthly, we have studied the effects of EO on firm performance based on a comprehensive data set of S&P 500 firms. While this ranking comprises the best performing publicly traded US-American firms, it may be worthwhile to investigate whether geographical research differences can be observed such as through continents, countries, or regions since many previous scholars have focussed on specific regions (such as done within the scholarly work of Bogatyreva et al., 2017). Therefore, we acknowledge that a research design applied to another geographical region may present different results.

Any specification into high-tech and less-tech industry types is vulnerable to the specification itself. While this study has classified firms according to their four-digit NAICS codes and grouped them into HT and LT, it has been understood that large corporations' business units (such as the ones of S&P 500) may be broadly different in their high-tech/less-tech intensive orientation. Therefore, a further break down of industry types into more granular specifications of HT and LT is advocated. This break down may include a categorisation and analysis of firms along the six-digit NAICS codes, furthered by a classification of firms into different types, for example, by company age and size. Considering that only well performing firms are presented in the SP500, also lower performers respectively other indices may be assessed.

Fifthly, for the configurational analysis, the samples were categorised into low, medium, and high performers wherein the lowest and highest performers were considered at a 10% range. Reasons for this justification were provided along with section 5.2. This task limits the sample to the reduced number of firms within each group of poorer and better performers. Critics may argue to either increase and test this range at the 20% or 30% level or to expand the overall sample size.

Sixthly, throughout the extensive review of literature, various possible control variables for this research were presented. While especially the variables of firm age and size displayed to be reliable control variables in earlier studies of this kind and, therefore, were employed here (refer to Hughes et al., 2007 or Rauch et al., 2009), we appreciate that additional control variables have been identified by scholars. For example, these include various industry measures (such as sector differences assessed via the usage of dummy codes) (refer to Wiklund & Shepherd, 2005 or Kraus et al., 2012), different types of market entry and types of organisations (refer to Miller, 2011), number of external relationships, recent mergers and acquisitions, prior conditions (historical performance), firm reputation (ideas of the author) as well as the age of a firm's founder, the R&D intensity, and additional firm- and/or context-related measures (Choi & Williams, 2016). As this listing shows, too frequently, context was ignored (Miller, 2011) for which reason an added control variable may provide the missing clarity in research outcomes. Future scholars may explore this study's research design by selected but advanced control variables further. These variables should always be appropriately verified according to a research's intentions.

Finally, less of a study limitation, instead a matter of fact relating to the early and formative state of applying the CATA approach within EO research: Scholarly works need to be able to examine the existence and strength of a firm's entrepreneurial strategic vision as it describes an essential mindset by the respective top-level management (Ireland et al., 2009). Ireland et al. (2009) argued that judgement calls are required to verify such a vision, who shares it, and how it evolves with time. From the knowledge gained through this study, we consider firm-published papers such as 10-K and LTS files as reliable and easily accessible sources. While we have outlined, in addition to Short et al.'s (2009) initial steps, a first guideline on how to analyse such texts through CATA, we know that further steps are required to be taken. Research needs to be able to document written or oral communications of firm visions through secondary data, ideally over a time-span of multiple years (refer to Ireland et al., 2009). Conclusively, these research limitations provide a fruitful base for future research on EO to define the configuration and contingency under EO in even greater detail. This definition should include environmental and temporal considerations.

7.4. Recommendations and Directions for Future Research of EO

The here performed extensive review of the literature, as well as this study's findings, act as a significant step forward to the conceptual understanding of EO along with its growing knowledge regarding configurational, contingency, environmental, and temporal considerations. Largely, scholars are urged to invest in reviewing the present literature and to demonstrate awareness of the way the EO research thus far aids in dialogues within this field. Furthermore, scholarly works on EO are encouraged to embrace and develop new and improved measures of the EO construct (Anderson et al., 2015; Miller, 2011; Covin & Wales, 2018). While the value of the past conclusions to EO research made by Covin and Slevin (1989), Lumpkin and Dess (1996), and others remain indisputable, it is essential for future scholars to research revised indicators in this field in an effort to better the understanding of EO and its nuances. Hence, the following sections will present recommendations that may yield support in outlining these new directions with reference to the primary fields of this study concerning the configurational, contingency, environmental, and temporal aspects (in addition to general recommendations for subsequent research).

7.4.1. General Recommendations and Directions for Future Research

Firstly, generally, future research may empirically benefit in testing the hypotheses and findings of this thesis across different populations. While this study has focussed on S&P 500, comprising the highest performing publicly traded US-American firms, it would also be worthwhile to investigate whether differences based on configurational, contingency, environmental, and temporal aspects recur according to a population's make up or geographical region (refer to Bogatyreva et al., 2017). This perspective is driven by the contextuality of regions or countries as economies, national laws, or institutions may have a different impact on certain firms (Miller, 2011). Furthermore, this study's findings invite scholars to examine other population sets apart from the S&P 500 such as the Fortune 500. This to test whether, for the CATA assessment of 10-K and LTS files, similar results can be reported. In addition to that, larger sample sizes may offer a higher level of statistical significance.

Secondly, apart from the previously drawn contributions (please refer to section 7.1 and section 7.2), research is only able to provide limited guidance to firms and their top-level management for several reasons (see also to Schillo, 2011). Therefore, while this study increases EO knowledge by the observation that each dimension impacts various business performance indicators differently, it adds an additional layer of more complexity for managerial decision-making since each firm faces its own unique internal and external challenges. Hence, as Schiller (2011) has noted, these individual combinations are not dominated by single factors as they may have been studied within a particular EO research. In fact, previous studies were only able to apply selected variables to their employed regression models. This limitation is an additional reason for scholarly works to call for more context sensitivity within the EO space (Miller, 2011; Covin & Wales, 2018). Moreover, the level of analysis is crucial as it can vary in terms of EO, for example, as seen in a possible differentiation of firm- versus individual-level EO. For greater detail on context, please refer to Zahra and Wright (2011) who have presented an initial conceptualisation of the dimensions and indicators of context for studies of entrepreneurship. While this thesis has provided an addition in this direction of research, a holistic understanding of the literature available is required to deliver a much higher level of granularity for firm-specific contexts. This understanding will need to be adopted throughout managerial decision-making activities for optimum effectiveness. Thus, research is urged to examine whether this study's findings can be transferred to contexts outside the here investigated populations and whether further variables are required to be added.

Thirdly, there has only been limited longitudinal research on EO up till now. This shortage was noted by Miller (2011) as well, who argued that the lack of longitudinal studies on EO has made it difficult to discuss causal relationships within EO itself, firm contexts as well as performance. Wiklund and Shepherd (2011) likewise urged for more specific longitudinal conceptualisations to assess an EO's time, causality, and reciprocity aspects. Yet, little has emerged to date. Therefore, further exploration in this direction is suggested to develop more sophisticated methods to study longitudinal effects of the here applied approaches to configurational, contingency, environmental, and especially temporal aspects. Additional recommendations concerning temporal considerations are presented in section 7.4.5.

Fourthly, caused by this study's population of S&P 500 firms and the sample selection, EO was assessed in accordance with the context of surviving firms. In reference to Rauch et al. (2009), it is probable that risk-taking, driven by EO activities, may lead to an increased likelihood of the failure of a firm. Hence, future research is recommended to examine this study's findings in a population comprising of non-survivors as well. Furthermore, it may also be worthwhile to test whether EO activities that lead to superior performance are related to an increased probability level of failure.

Fifthly, future scholars are encouraged to assess performance according to the individual performance measures such as sales growth, market share, gross-profit-margin, and return on assets, as EO was observed to have varying effects on these. Research and knowledge on EO would specifically be furthered by examining the effects of EO on the non-financial measures of firm performance. Please refer to section 2.4.3.2 on a potential selection of these ("Considerations When Measuring Performance"). Moreover, in the background of this study, financial measures may be split further. As an example, concerning the performance indicator of firm growth, it was McKelvie and Wiklund (2010) who identified three research streams that comprise growth as an outcome, the outcome of growth, and the growth process in three basic models of growth (organic, acquisition, and hybrid). They concluded that, even though limited progress in growth research has been made in recent years, firm growth comprises not one but multiple different phenomena. Firms may actively decide for specific growth strategies which, in turn, may have an impact on the here studied effects of EO on performance. Therefore, researchers are urged to reconsider the operationalisation of the measure 'performance' to understand its individual indicators by all their theoretical as well as empirical means.

7.4.2. Recommendations and Directions for Future Research pertaining to: Configurational Theory and Ideal Profiles

Firstly, with respect to the configurational theory, as already observed by Covin and Lumpkin (2011), future research on EO may examine the linkage of specific configurations of EO dimensions and their implementation during the different stages of firm lifecycles such as new venturing or strategic renewal. This aspect may incorporate the need for longitudinal studies within EO to investigate whether the ideal configurations will change over time or during different firm stages respectively. Hence, research is required to understand how firms are able to implement and make use of the relevant organisational capabilities that empower for superior firm performance (also refer to Kraus et al., 2012; Covin & Wales, 2018). Archival data of 10-K and LTS files, as analysed through CATA, will aid in reviewing EO-financial outcomes over a time-span of multiple years to draw the necessary conclusions.

Secondly, future endeavours may investigate the configurational conceptualisations that concurrently assess various contingencies of EO relationships within the identical model (also refer to Wales, 2016), therefore, combine both conceptualisations of configurational and contingency into one model. It was Covin and Slevin (1991) who initially encouraged the use of configurational models, proposing the line of argument that a comprehensive firm-level behaviour model must also consist of the aspects of environmental, organisational, and individual variables. While this thesis has included environmental and organisational considerations into the contingency model, the findings regarding the configurational theory may be likewise advanced by this perspective as well. Further useful taxonomies of the configurational analysis may include variables of firm leadership and governance, strategy, culture (see also Miller, 2011), or political constraints.

7.4.3. Recommendations and Directions for Future Research pertaining to: EO Multi-Dimensions Contingency Impact towards Performance

Firstly, with respect to the contingency theory, a stabilisation of theorising EO and its performance contingency may be intensified by examining further examples of possible linkages. Apart from Lumpkin and Dess' (1996) conceptual framework, there are numerous alternative but initial models that use contingencies of EO dimensions by including third variables (Boal & Bryson, 1987; Venkatraman, 1989; also refer to Covin & Wales, 2018). As presented within section 2.9, these include the Moderating-Effects Model, the Mediating-Effects Model, the Independent-Effects Model, and the Interaction-Effects Model (Lumpkin & Dess, 1996). Testing these models within an identical population may aid EO research in presenting additional insights into the EO-firm performance linkage.

Secondly, future research on EO is advised to consider study moderators that align with the complex context and setting of a firm as they have displayed to be driven by a number of variables including industry, environment, and time. The so-called 'contextualisation' (Zahra et al., 2014) will aid to increase the quality of EO scholarly works in multiple ways, including researchers to getting more acquainted with the construct they are assessing, motivating researchers to address EO concerns that matter, and, more fundamentally, including a research's context as part of the storytelling instead of merely controlling for context variables as has been done till date. Moreover, the theoretical and empirical boundaries of an EO construction should be acknowledged without allowing research models to overlap (also refer to Covin & Wales, 2018).

By taking the first step in the direction of industry-type categorisation, subsequent scholarly works are urged to distinguish between different kinds of firms within specific industry settings. This aspect is because variances in firm outcomes have often been determined to be caused by the industry (Short et al., 2009). A possible approach may include a carefully defined, further break-down of industry types into six-digit NAICS codes to examine whether similar effects as with the HT and LT industry type categorisation can be observed. This segmentation will allow researchers to take the next step in establishing a more detailed understanding of the firm context and the respective relationships across the studied moderator variables.

Thirdly, future research is urged to examine the extent to which firm EO may impact the nature and success of chasing opportunities (Lumpkin & Dess, 1996). This assessment includes the linkage of EO to other key predictor variables such as a company's strategies and tactics, size, or industry life cycle stages (refer also to Kreiser & David, 2010). Such tests will help in developing more comprehensive frameworks of firm-level EO.

Fourthly, the observation that EO dimensions vary independently of each other was partly discussed by previous scholars (such as Kreiser et al., 2002 or Hughes & Morgan, 2007); however, the debate regarding whether EO should be treated as a uni- or multidimensional construct continued (see also to Kraus et al., 2012; Covin & Wales, 2018; Schueler et al., 2018). Throughout this research, novel arguments have been presented for EO to be assessed on the basis of the multidimensional approach. Therefore, future research is recommended to investigate whether additional directions of EO and its multi-dimensions can be depicted to explore these complex issues further (see Lumpkin & Dess, 2001).

In reference to an EO's multi-dimensions, scholars are urged to examine how entrepreneurial processes impact firm outcomes in various settings: This, for example, may include the study of whether some of these dimensions are always present while the remaining ones may vary caused by firm, industry, or environmental contexts; to assess the processes that may form the base for firm entrepreneurial behaviour, thereby increasing a firm's competitive standing as well as its performance respectively; and to test how the presented constructs can be operationalised by research (refer to Lumpkin & Dess, 1996). Furthermore, Lumpkin and Dess (1996) raised the concern that scholars may perceive EO differently than individuals in business. One party may not see risks that the other one categorises as high or one of them may distinguish non-entrepreneurial behaviour as riskier than the other.

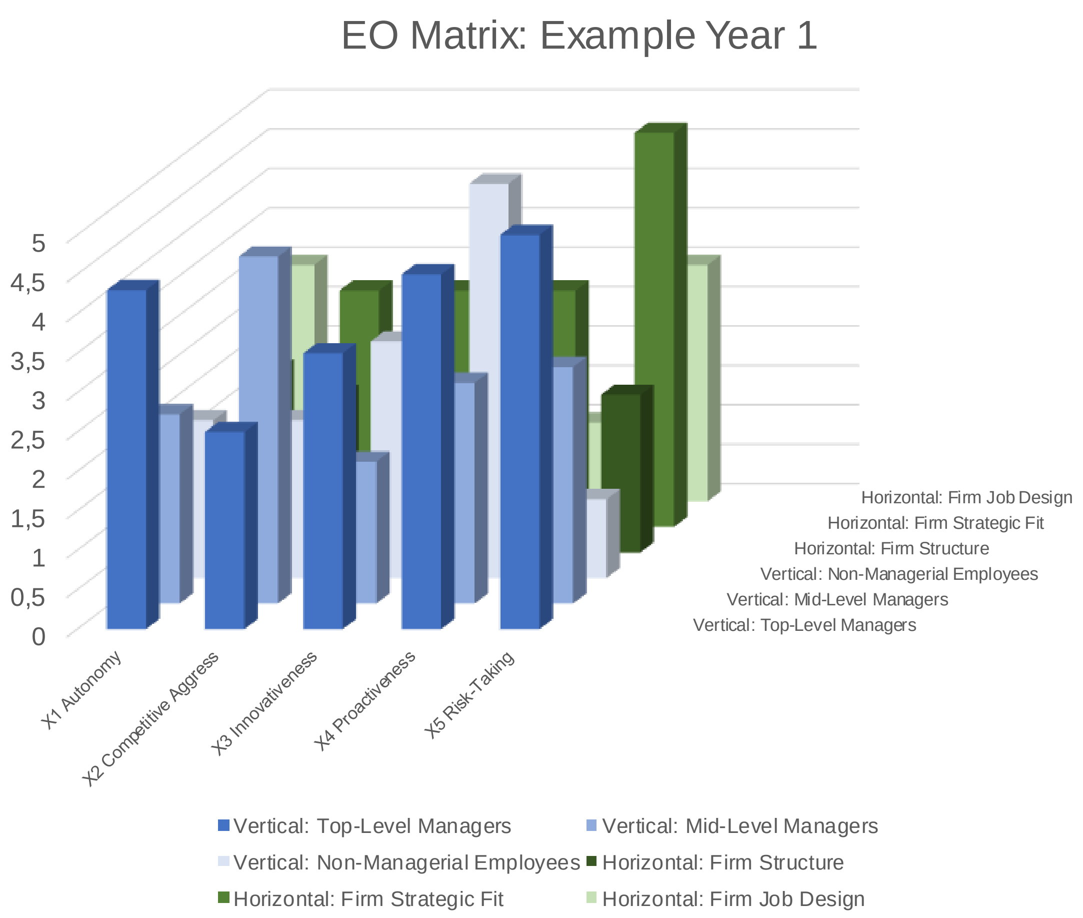
Moreover, we acknowledge the opportunity for upcoming research to group the here studied data through richer, more fine-grained conceptualisations in innovative ways that may aid in developing a line of argument proposing the possibility of yet unidentified EO dimensions. Alternately, subsequent research along this path may also yield the discovery of plausible reasons to collapse specific EO dimensions. This investigation could be determined by considering various fundamental components of EO dimensions, not purely enhancing the number of items used to describe an EO dimension but by securing a closer link between the theory and measurement approach (Lumpkin & Dess, 2001). Thus, an EO construct should align with the employed measurement model. Additionally, this task will allow for comparisons of characteristics and performance outcomes across different groups.

Fifthly, referring to the causal relationship of the EO-performance contingency, future research may investigate whether not only an impact of EO on firm outcomes but also an effect of performance on EO can be observed as well. Examples for this may include the access to slack resources that allow for expansion and experimentation within a firm that may result in identifying and securing new opportunities (such as stated by Hughes & Morgan, 2007). Moreover, buffers in available resources may aid in collateralising negative environmental influences (refer to Rauch et al., 2009). Therefore, there exists the general assumption that EO is resource intensive (Hughes & Morgan, 2007). As a result, future research may seek to explore which resources an EO relies on to support its outcomes. These may include a specific set of resources within the firm and not necessarily market type resources.

Sixthly, as outlined throughout the earlier sections of this thesis, research on EO has begun to question whether it might rely on the actions of lower-level employees (refer to section 2.2.3 on the vertical dimensionality of EO). Within traditional research, however, firm-level entrepreneurship has been clearly separated from examining EO as an individual-level concept. For future research, it may prove insightful to investigate this study's firm-level findings across various levels of an organisation. This aspect could help with examining whether the described effects accumulate or replicate within a firm's lower levels. Furthermore, this may aid in developing the transitional stages of a firm's entrepreneurial processes across units, areas as well as time, to introduce enhanced and new measures of EO (see also Wales et al., 2011). Such transitional stages include exploratory initiatives and projects that would lead to introducing new market offerings (Rauch et al., 2009; Wales et al., 2011).

Thus, concerning the promising conceptualisations of the vertical and horizontal dimensionality of EO, we encourage upcoming research initiatives to assess these new dimensions in conjunction with the more common multi-dimensions of EO. A framework may be employed to test how these additional dimensions relate to the dimensions of EO. It is assumed that each of the five EO dimensions varies according to the vertical and horizontal dimensions independently and that each of these new dimensions may have negative, neutral, or positive impacts on firm performance. Studying this over time, respectively for multiple years in the past, may equip managers with a diagnostic tool in order to review their entrepreneurial activities on these various levels on a regular basis.

The following Figure 27 displays a proposal of such matrix simulation with fictious figures for the five EO dimensions as well as their matching vertical and horizontal dimensions. This framework may be assessed with a firm- or even industry focus. Building such graphs for multiple years (here referred to as Year 1 and Year 2) may provide the analyst a visual understanding of the contextuality, variation, and probable stabilisation of a certain EO over time; furthermore, how these dimensions may need to be increased or decreased according to their underlying theoretical mechanisms to actively adjust financial outcomes. Such visualisation can be extended according to a research's aims.



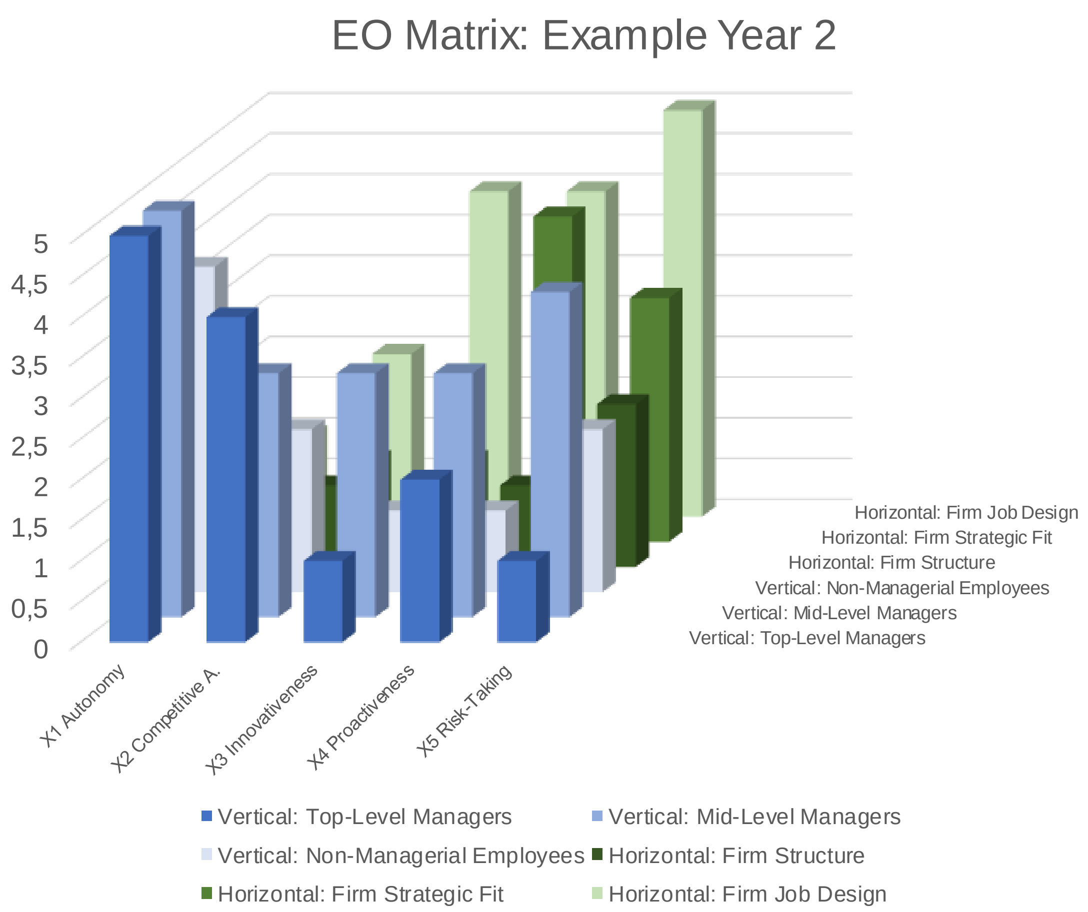


Figure 27: Recommendations and Directions for Future Research: Diagnostic Tool of Vertical and Horizontal Dimensionality over time (Year 1 and Year 2)

Seventhly, while previous research on firm-level entrepreneurship focusses on internal venture expansion primarily (Burgelman, 1983; Dess & Lumpkin, 2005), we acknowledge that firms may potentially grow through mergers and acquisitions, joint ventures, or strategic alliances too (refer to Keil, 2002 or Williams, 2018). The context-based view, especially referring to the contingencies of the EO dimensions with performance moderated by industry types, may be tested concerning the different external venturing perspectives of EO.

Lastly, in a paper on EO in multinational corporations by Williams and Lee (2009), based on combining R&D and asset growth investment intensities, three types of entrepreneurial stances were defined that may prove worthwhile to investigate under the multidimensional EO-performance contingency perspective as described here. These stances comprise conservative, aggressive-asset growth, and balanced respectively. This initiative may aid in identifying important factors of EO within the strategic management and ongoing renewal of international corporations.

7.4.4. Recommendations and Directions for Future Research pertaining to: Impact of the External Environment on the EO-Performance Relationship

Firstly, concerning the external environment, it can be acknowledged that further research may discover additional environmental moderators impacting the EO-performance linkage to the ones outlined here. Besides industry munificence and turbulence, in the context of OTE, it was initially Dess and Beard (1984) who proposed an investigation of industry complexity as well. Therefore, additional ones may be discovered to provide an even more comprehensive understanding of the 'environment' (see also Rauch et al., 2009).

While industry turbulence, munificence as well as complexity remain the principal dimensions to describe a firm's external environment within this research space, reconsidering the theoretical basis of OTE may provide additional parameters to consider (Harris, 2004; see also Lumpkin & Dess, 2001 and Rauch et al., 2009). Originally, it was Aldrich (1970) who described an initial framework of six environmental dimensions that include environmental capacity, homogeneity & heterogeneity, stability & instability, concentration & dispersion, consensus & dissensus, and turbulence. Re-examining these in this study's context may support the creation of new, empirically testable variables to secure a longitudinal stable and generalisable construct of the external environment (refer to Harris, 2004). Further, it may also help our understanding in noting whether a moderation of these dimensions towards the EO-performance linkage is persistent.

Moreover, this may include the discovery of mediator (Rosenbusch et al., 2013) and more context-related study variables as well (refer to Hughes & Morgan, 2007; Rosenbusch et al., 2011). In previous EO scholarly works, there have been various attempts to define the context inferring with environmental dimensionality (refer to Miller, 2011). To describe this, possible variables may comprise firm-level variables such as the flexibility and quality of the workforce, individual-level variables linked to employees at different firm levels, or strategy considerations (refer to Rosenbusch et al., 2013 & section 2.2.3 for the vertical and section 2.2.4 for the horizontal dimensionality of EO). These may include organisational structure and process, or studies of specific life cycle stages (refer also to Kreiser & David, 2010; Miller, 2011). In addition to the EO-performance linkage, as already noted by Rosenbusch et al. (2013), such variables may even moderate the linkage of the external environment with EO. Therefore, besides the consideration of a firm's environment, EO scholars are urged to reconsider conceptual models of EO including other contextual variables to receive a comprehensive understanding of the same. Ultimately, there are many external facets of context that concurrently impact EO and its linkage to various sources and outcomes (Miller, 2011; Covin & Wales, 2018). Thus, the richness that defines a context requires a microscopic focus from subsequent scholarly works.

Secondly, in addition to the overall necessity for more longitudinal studies within the EO space, future research is suggested to study a firm's external environmental impact on the EO-performance contingency over a certain period of time as well (at least throughout three years as employed within this thesis). This perspective is based on the tendency of environmental conditions requiring a certain lead-time to have a measurable effect on the studied linkage.

Next, with respect to the stabilisation of theorising in EO research (refer to section 2.8), it can be worthwhile to investigate whether bidirectional relationships of EO and firm performance inclusive of the environment exist. Early scholars such as Miller and Friesen (1982) as well as Covin and Slevin (1991) have argued that, in turn, EO may also affect the external environment, for example, through disruptive innovations (Rosenbusch et al., 2013). This causal direction has yet to be studied. Upcoming research in this aspect may, therefore, benefit by focusing on longitudinal studies to build wide-ranging frameworks that include the external environment and its complex linkages.

Fourthly, this thesis has employed content analysis for measuring a firm's EO; future research may extend the presented methodology to enhance the objective with subjective measures (and vice-versa) to find confirmation that subjective measures of the external environment stack up to the well-established objective scales. This test could be performed via an analysis of the 10-K and LTS files as has been done for the assessment of EO within this study. In early years, this was already noticed by Dess and Beard (1984) who argued that both perceptual and objective measures would be relevant for a comprehensive conceptualisation of a turbulent and munificent environment. In this context, this may help to distinguish whether both the external environment and a top-level manager's choice drive the firm behaviour, and ultimately, its performance outcomes. While this could be assessed through CATA, such an approach may further aid future research on EO by elaborating on the linkage of objective and subjective measures with the external firm environment (refer to Dess & Beard, 1984).

7.4.5. Recommendations and Directions for Future Research pertaining to: Temporal Considerations of the EO-Performance Relationship

Firstly, while the demand for more longitudinal or time-focused studies in EO research is not new (Zahra et al., 2014), concerning temporal considerations, we urge future research to assess the lifespan of the effects of EO on performance with increased attention. This thesis takes an innovative step in this direction by testing for temporal considerations of EO that have rarely been captured within previous works (see Covin & Wales, 2018 and Rauch et al., 2009).

Moreover, addressing research concerns raised within previous sections, scholars are recommended to consider EO in more specific contexts of a firm also over time. While a number of contextual measures are available for different time periods (Zahra et al., 2014), only parts of temporal contexts have been captured for firms to date (such as for EO). Therefore, this observation would especially benefit longitudinal studies on EO. This outcome will help in the understanding and building of associations of dynamic state change, the new owner- or leadership, or strategic change to a firm's EO-performance linkage (see Wales et al., 2011). Hughes and Morgan (2007), for example, argued that a firm's EO strategy, despite being perceived as effective, cannot and will not remain static over time. This need for clarification requires immediate action by research in terms of temporal considerations. Furthermore, assessing other dimensions of context and moderators will aid in enlarging the current knowledge gained thus far behind the drivers of EO, how it is set within firms, and how an EO's manifestation may change specifically over time across the different levels of analysis (Wales et al., 2011 and Zahra et al., 2014).

Secondly, to further grasp the question on the causality within EO relationships, upcoming studies in this field are advised to measure a multidimensional EO at more than one point in time (Rauch et al., 2009). This aspect will support in drawing a clearer picture of when, why, and how a firm may cycle its EO over a certain period (Hughes & Morgan, 2007; Wales et al., 2011); additionally, it may also ascertain why EO may be very consistent in specific firm contexts while it may adapt among high and low periodical levels of EO within others (Covin & Slevin, 1990; Hughes & Morgan, 2007; Wales et al., 2011).

Next, more research is required to understand the anomalies that were detected within the EO-performance linkage of when EO is valuable or problematic for firm performance (also refer to Hughes & Morgan, 2007 and Miller, 2011). Herein, this study deconstructed EO into its five individual dimensions and tested its effects on performance over a time-span of three years within the different industry contexts. While this added to current research by discovering that the findings of EO dimensions are not equally valuable for different performance measures, future research is recommended to investigate these further. This knowledge is especially pertinent with respect to the different performance metrics and how they get impacted by EO over time.

Fourthly, scholars are encouraged to investigate whether interactions across EO dimensions exist over time. While this thesis has found correlations in selected instances at the point of the study (2012), it remains to be tested whether dedicated dimensions may leverage others over the duration of multiple years (refer to section 5.2.1). This knowledge is regarded as valuable for the overall understanding of the manifestation of a firm's EO.

7.4.6. Recommendations and Directions for Future Research from the use of Computer-Aided Text Analysis (CATA)

Firstly, concerning content analysis, future research is invited to explore additional sample sources apart from the here applied 10-K and LTS files to investigate whether the observed results replicate across them through a tested CATA approach. By performing the analyses employing the same study measures, further external validity and a generalisability of research results may be provided. Possible file sources may include IPO prospectus statements or mission statements (Short et al., 2009).

Next, McKenny et al. (2016) have discussed three sources of errors that are specifically pertinent for measures developed through CATA that future research is recommended to consider. (i) The Transient Error is caused by a phenomenon that impacts an author's word choice in the state of writing, including the emotional state, the firm climate, or the economic state. This error may be avoided by analysing the texts available from at least two different points in time and by calculating a test-retest reliability estimate. (ii) The Specific Factor Error is triggered by a misinterpretation of CATA results due to wrong decisions made in the preparation phase of the word lists. To fight this, McKenny et al. (2016) propose that at least 10% of the studied texts be manually analysed to calculate parallel forms of reliability estimates then. Alternatively, the lists of used terms per dimensions may be adapted to see whether differences in their results are reported. (iii) The Algorithm Error is relevant for content analysis as different software packages may employ varying algorithms for the identification and determination of matching words within texts to the actual word lists. This error may be eliminated in future research by including the Krippendorff's Alpha Coefficient and by analysing the same texts with two different content analysis software tools.

CATA's popularity as a measurement approach is growing in the management base and related fields of study (Short et al., 2009 and Miller, 2011). While the use of content analyses suggests providing great detail on managerial and firm perspectives in comparison to the Covin and Slevin survey measurement scale, it is surprising that these have rarely been considered in the past (Wales, 2016). Knowing the limitations of archival methods, by employing content analysis within the background of this study, we offer a quantity of novel and helpful guidelines for future research. These will aid scholars to measure conceptualisations of EO through CATA within an unlimited number of contextual settings (refer to Appendix 3 for a proposal of an explanation on measuring industry conditions via a CATA approach). While conventional research methods, such as surveys, are not able to keep up with content analysis (too many heterogeneous samples and remote questionnaires – Miller, 2011), future research may benefit from minimising possible errors by introducing checks for validity to secure a higher confidence in findings made through CATA (see Short et al., 2009). These tasks will aid content analysis in accomplishing its potential by simplifying theory developments and valuable practical applications (Short et al., 2009).

7.5. Research Conclusion

To conclude, EO research is urged to keep advancing its proposed conceptualisations more empirically, especially within the here presented spaces that have been less explored to date, including a substantive shifting in focus, context, and methods. To examine the relationship of EO with firm performance is a fundamental matter for scholars and managers considering the situations within the quickly changing as well as adapting markets and demands they are facing every day in business. By revisiting entrepreneurial orientation and its contribution to business performance according to the two industry types of HT and LT in support of the novel research approach of content-analysis, it was our aim to extend previous knowledge by the here studied areas of configurational, contingency as well as environmental and temporal considerations that have all displayed to be an essential impactor towards a comprehensive EO-business performance analysis. Explorations from this study will aid in further understanding how and through which causal processes a firm’s EO is capable of impacting specific business outcomes in the long run. Furthermore, it will also provide insights in clearing the picture around the multidimensionality of EO and in refining its, as complex perceived, context-related measures. Ultimately, this will assist upcoming scholarly works in the theoretical development within the entrepreneurship and management practice.

REFERENCES

Agresti, A., & Kateri, M. (2011). *Categorical data analysis.* Heidelberg: Springer Berlin Heidelberg.

Aldrich, H. (1979). *Organizations and environments.* Englewood Cliffs, USA: Prentice Hall.

Aldrich, H. (1992). *Methods in our madness? Trends in entrepreneurship research. The state of the art in entrepreneurship research.* Boston, USA: PWS-Kent.

Aldrich, H. E., & Pfeffer, J. (1976). *Environments of organizations.* Palo Alto, CA, USA: Annual Reviews (Annual Review of Sociology).

Allen, J., Davis, D., & Morris, M. (1994). Fostering Corporate Entrepreneurship: Cross-Cultural Comparisons of the Importance of Individualism versus Collectivism. *Journal of International Business Studies 25(1)*, 65-89.

Amernic, J., Craig, R., & Tourish, D. (2007). The transformational leader as pedagogue, physician, architect, commander, and saint: Five root metaphors in Jack Welch's letters to stockholders of General Electric. *Human Relations 60(12)*, 1839-1872.

Åmo, B., & Kolvereid, L. (2005). Organizational strategy, individual personality and innovation behavior. *Journal of Enterprising Culture 13*, 7-19.

Anderson, B., Covin, J., & Slevin, D. (2009). Understanding the relationship between entrepreneurial orientation and strategic learning capability: an empirical investigation. *Strategic Entrepreneurship Journal 3(3)*, 218-240.

Anderson, B., Kreiser, P., Kuratko, D., Hornsby, J., & Eshima, Y. (2015). Reconceptualizing entrepreneurial orientation. *Strategic Management Journal 36(10)*, 1579-1596.

Anderson, N. R., & West, M. A. (1998). Measuring climate for work group innovation: development and validation of the team climate inventory. *Journal of organizational behavior 19(3)*, 235-258.

Anderson, N., & West, M. A. (1996). The Team Climate Inventory: Development of the TCI and its applications in teambuilding for innovativeness. *European Journal of work and organizational psychology 5(1)*, 53-66.

Andrews, K. (1971). *The concept of corporate strategy.* Homewood, USA: IL: Irwin.

Ansoff, H. (1965). *Corporate Strategy.* New York, USA: McGrawHill.

Antoncic, B., & Hisrich, R. (2001). Intrapreneurship: Construct refinement and cross-cultural validation. *Journal of Business Venturing 16(5)*, 495-527.

Antoncic, B., & Hisrich, R. (2004). Corporate entrepreneurship contingencies and organizational wealth creation. *Journal of Management Development 23(6)*, 518-550.

Article from University of Idaho. (2018, November 03). Retrieved from Ontology and Epistemology: http://www.webpages.uidaho.edu/engl257/classical/ontology_and_epistemology.htm

Atuahene-Gima, K., & Ko, A. (2001). An empirical investigation of the effect of market orientation and entrepreneurship orientation alignment on product innovation. *Organization Science 12(1)*, 54-74.

Audretsch, D., & Acs, Z. (1990). The entrepreneurial regime, learning, and industry turbulence. *Small Business Economics 2(2)*, 119-128.

Avlonitis, G., & Salavou, H. (2007). Entrepreneurial orientation of SMEs, product innovativeness, and performance. *Journal of Business Research 60(5)*, 566-575.

Awang, A., Khalid, S. A., Kassim, K. M., Ismail, M., Zain, R. S., & Madar, A. R. (2009). Entrepreneurial orientation and performance relations of Malaysian Bumiputera SMEs: The impact of some perceived environmental factors. *International Journal of Business and Management 4(9)*, 84.

Baden-Fuller, C., & Volberda, H. (1997). Strategic renewal: How large complex organizations prepare for the future. *International Studies of Management & Organization 27(2)*, 95-120.

Bain, J. (1956). *Barriers to New Competition.* Cambridge, MA: Harvard University Press.

Baird, I., & Thomas, H. (1985). Toward a contingency model of strategic risk taking. *Academy of Management Review 10*, 230-243.

Baird, I., & Thomas, H. (1990). What is risk anyway? Using and measuring risk in strategic management. *Risk, Strategy, and Management 5*, 21-54.

Banks, E., & Dunn, R. (2004). *Practical risk management: an executive guide to avoiding surprises and losses.* New York, USA: John Wiley & Sons.

Banks, G., O'Boyle Jr, E., Pollack, J., White, C., Batchelor, J., & Whelpley, C. e. (2016). Questions about questionable research practices in the field of management: A guest commentary. *Journal of Management 42*, 5-20.

Barnett, T., Chadwick, K., Dwyer, S., & Richard, O. C. (2004). Cultural Diversity in Management, Firm Performance, and the Moderating Role of Entrepreneurial Orientation Dimensions. *Academy of Management 47(2)*, 255-266.

Barney, J., & Busenitz, L. (1997). Differences between entrepreneurs and managers in large organizations: Biases and heuristics in strategic decision-making. *Journal of Business Venturing 9(30)*, 9–30.

Barr, P., Stimpert, J., & Huff, A. (1992). Cognitive change, strategic action, and organizational renewal. *Strategic Management Journal 13(S1)*, 15-36.

Barringer, B., & Bluedorn, A. (1999). The relationship between corporate entrepreneurship and strategic management. *Strategic Management Journal 20(5)*, 421-444.

Bartlett, C., & Ghoshal, S. (1993). Beyond the reform: Toward a managerial theory of the firm. *Strategic Management Journal 14*, 23–46.

Beard, D., & Dess, G. (1981). Corporate-level strategy, business-level strategy, and firm performance. *Academy of Management Journal 24(4)*, 663-688.

Begley, T., & Boyd, D. (1987). Psychological characteristics associated with performance in entrepreneurial firms and smaller businesses. *Journal of Business Venturing 2*, 79-93.

Beliaeva, T. S. (2018). Benefiting from economic crisis? Strategic orientation effects, trade-offs, and configurations with resource availability on SME performance. *International Entrepreneurship and Management Journal*, 1-30.

Bhuian, S., Menguc, B., & Bell, S. (2005). Just entrepreneurial enough: the moderating effect of entrepreneurship on the relationship between market orientation and performance. *Journal of Business Research 58(1)*, 9-17.

Birkinshaw, J., Hood, N., & Jonsson, S. (2003). Building Firm-Specific Advantages in Multinational Corporations: The Role of Subsidiary Initiative . *The Multinational Subsidiary*, 256-289.

Blaikie, N. (2009). *Designing Social Research: The Logic of Anticipation.* USA: Polity Press.

Blanche, M., Blanche, M., Durrheim, K., & Painter, D. (2006). *Research in practice: Applied methods for the social sciences.* Juta and Company Ltd.

Bligh, M., Kohles, J., & Meindl, J. (2004). Charisma under crisis: Presidential leadership, rhetoric, and media responses before and after the September 11th terrorist attacks. *The Leadership Quarterly 15(2)*, 211-239.

Block, Z. &. (1989). Corporate venturing: practices and performance in the US and Japan. *In Center for Entrepreneurial Studies, Stem School of Business, New York University New York Working paper*.

Boal, K., & Bryson, J. (1987). Representation, testing and policy implications of planning processes. *Strategic Management Journal 8(3)*, 211-231.

Bogatyreva, K. B. (2017). As different as chalk and cheese? The relationship between entrepreneurial orientation and SMEs' growth: evidence from Russia and Finland. *Journal of East-West Business 23(4)*, 337-366.

Boling, J., Pieper, T., & Covin, J. (2015). CEO tenure and entrepreneurial orientation within family and nonfamily firms. *Entrepreneurship Theory and Practice*.

Bourgeois, L., & Brodwin, D. (1984). Strategic implementation: Five approaches to an elusive phenomenon. *Strategic Management Journal 5(3)*, 241-264.

Bower, J. (1990). Managing the resource allocation process. *Boston: Harvard Business School Press*.

Bowman, E. (1984). Content analysis of annual reports for corporate strategy and risk. *Interfaces 14(1)*, 61-71.

Brayfield, A., & Crockett, W. (1955). Employee attitudes and employee performance. *Psychological bulletin 52(5)*, 396-424.

Brockhaus, R. (1980). Risk taking propensity of entrepreneurs. *Academy of Management Journal 23*, 509-520.

Bruce, R. A., & Scott, S. G. (1994). Determinants of Innovative Behavior: A Path Model of Individual Innovation in the Workplace. *Academic Management Journal 37(3)*, 580-607.

Brüderl, J., & Preisendörfer, P. (2000). Fast-growing businesses: empirical evidence from a German study. *International Journal of Sociology 30*, 45-70.

Bruton, G., Ahlstrom, D., & Obloj, K. (2008). Entrepreneurship in emerging economies: Where are we today and where should the research go in the future. *Entrepreneurship theory and practice 32(1)*, 1-14.

Bryman, A. (1984). The debate about quantitative and qualitative research: a question of method or epistemology? *British journal of Sociology*, 75-92.

Bryman, A. (2015). *Social Research Methods.* USA: Oxford University Press.

Budner, S. (1962). Intolerance of ambiguity as a personality variable. *Journal of Personality*, 29-50.

Burgelman, R. (1983). Corporate entrepreneurship and strategic management: insights from a process study. *Management Science 29(12)*, 1349-1364.

Burns, P. (2008). *Corporate Entrepreneurship: Building an Entrepreneurial Organization.* Indiana, USA: Palgrave Macmillan.

Burns, T., & Stalker, G. (1961). The management of innovation. London: Tavistock. Chandler, A. 1962. Strategy and structure. *Business Week (Special Issue)*.

Busenitz, L., & Barney, J. (1997). Differences between entrepreneurs and managers in large organizations: Biases and heuristics in strategic decision-making. *Journal of Business Venturing 12(1)*, 9-30.

Calantone, R., Cavusgil, S., & Zhao, Y. (2002). Learning orientation, firm innovation capability, and firm performance. *Industrial Marketing Management 31(6)*, 515-524.

Cantillon, R. (1734). *Essai sur la nature du commerce en general (Essay on the nature of general commerce).* London, UK: Macmillan.

Carley, K. (1997). Extracting team mental models through textual analysis. *Journal of Organizational Behavior 18(s1)*, 533-558.

Carter, N. M., Stearns, T. M., Reynolds, P. D., & Miller, B. A. (1994). New venture strategies: Theory development with an empirical base. *Strategic Management Journal, 15(1)*, 21-41.

Chandler, A. (1990). *Strategy and structure: Chapters in the history of the industrial enterprise.* Cambridge, USA: MIT press.

Chapple, K., Markusen, A., Schrock, G., Yamamoto, D., & Yu, P. (2004). Gauging metropolitan “high-tech” and “I-tech” activity. *Economic Development Quarterly 18(1)*, 10-29.

Chen, G., Crossland, C., & Luo, S. (2015). Making the same mistake all over again: CEO overconfidence and corporate resistance to corrective feedback. *Strategic Management Journal 36(10)*, 1513-1535.

Chen, J., Zhu, Z., & Anquan, W. (2005). A system model for corporate entrepreneurship. *International Journal of Manpower 26(6)*, 529-543.

Chen, M., & Hambrick, D. (1995). Speed, stealth, and selective attack: How small firms differ from large firms in competitive behavior. *Academy of Management Journal 38(2)*, 453-482.

Chesbrough, H. (2006). The era of open innovation. *Managing Innovation and Change 127(3)*, 34-41.

Cho, H., & Pucik, V. (2005). Relationship between innovativeness, quality, growth, profitability, and market value. *Strategic Management Journal 26(6)*, 555-575.

Choi, S., & Williams, C. (2016). Entrepreneurial orientation and performance: mediating effects of technology and marketing action across industry types. *Industry and Innovation 23(8)*, 673-693.

Christensen, C., & Bower, J. (1996). Customer power, strategic investment, and the failure of leading firms. *Strategic Management Journal 17(3)*, 197-218.

classcodes.com. (2016, November 03). *Class Codes*. Retrieved November 03, 2016, from classcodes.com: classcodes.com

Collins, O., & Moore, D. (1970). *The organization makers.* New York, USA: Appleton.

Combs, J., Crook, T., & Shook, C. (2005). The dimensionality of organizational performance and its implications for strategic management research. *Research Methodology in Strategy and Management 2(05)*, 259-286.

Cools, E., & Van den Broeck, H. (2007). The hunt for the heffalump continues: can trait and cognitive characteristics predict entrepreneurial orientation? *Journal of Small Business Strategy 18(2)*, 23-41.

Cooper, A., Willard, G., & Woo, C. (1986). Strategies of high performing new and small firms: A reexamination of the niche concept. *Journal of Business Venturing 1(3)*, 247-260.

Cooper, R. (1979). The dimensions of industrial new product success and failure. *Journal of Marketing 43*, 93-103.

Corley, K. (2004). Defined by our strategy or our culture? Hierarchical differences in perceptions of organizational identity and change. *Human Relations 57*, 1145–1177.

Courtis, J. (1982). Private shareholder response to corporate annual reports. *Accounting & Finance 22(2)*, 53-72.

Covin, I. G., & Covin, T. (1990). Competitive aggressiveness, environmental context, and small firm performance. *Entrepreneurship; Theory and Practice 14(4)*, 35-50.

Covin, J. G., & Lumpkin, G. T. (2011). Entrepreneurial orientation theory and research: Reflections on a needed construct. *Entrepreneurship: Theory & Practice 35 (5)*, 855-872.

Covin, J. G., & Wales, W. J. (2018). Crafting High-Impact Entrepreneurial Orientation Research: Some Suggested Guidelines. *Entrepreneurship Theory and Practice*, 1-16.

Covin, J., & Miles, M. (1999). Corporate entrepreneurship and the pursuit of competitive advantage. *Entrepreneurship: Theory and Practice 23(3)*, 47-47.

Covin, J., & Miller, D. (2014). International entrepreneurial orientation: conceptual considerations, research themes, measurement issues, and future research directions. *Entrepreneurship Theory and Practice 38(1)*, 11-44.

Covin, J., & Slevin, D. (1988). The influence of organization structure on the utility of an entrepreneurial top management style. *Journal of Management Studies 25(3)*, 217-234.

Covin, J., & Slevin, D. (1989). Strategic management of small firms in hostile and benign environments. *Strategic Management Journal 10*, 75–87.

Covin, J., & Slevin, D. (1990). New venture strategic posture, structure, and performance: An industry life cycle analysis. *Journal of business venturing 5(2)*, 123-135.

Covin, J., & Slevin, D. (1991). A conceptual model of entrepreneurship as firm behavior. *Entrepreneurship Theory and Practice 16*, 7–25.

Covin, J., & Wales, W. (2012). The measurement of entrepreneurial orientation. *Entrepreneurship Theory and Practice 36(4)*, 677-702.

Covin, J., Green, K., & Slevin, D. (2006). Strategic process effects on the entrepreneurial orientation-sales growth rate relationship. *Entrepreneurship Theory and Practice 30(1)*, 57-81.

Cowton, C. (1998). The use of secondary data in business ethics research. *Journal of Business Ethics 17(4)*, 423-434.

D'Aveni, R., & MacMillan, I. (1990). Crisis and the content of managerial communications: A study of the focus of attention of top managers in surviving and failing firms. *Administrative Science Quarterly 35*, 634-657.

Day, G., & Wensley, R. (1988). Assessing advantage: a framework for diagnosing competitive superiority. *The Journal of Marketing 52*, 1-20.

De Clercq, D., Dimov, D., & Thongpapanl, N. (2010). The moderating impact of internal social exchange processes on the entrepreneurial orientation-performance relationship. *Journal of Business Venturing 25(1)*, 87-103.

De Jong, J., Parker, S., Wennekers, S., & Wu, C. (2015). Entrepreneurial behavior in organizations: does job design matter? *Entrepreneurship Theory and Practice 39(4)*, 981-995.

Dean, C. (1993). Corporate entrepreneurship: Strategic and structural correlates and impact on the global presence of United States firms. *Doctoral Dissertation, University of North Texas*.

Delmar, F., Davidsson, P., & Gartner, W. (2003). Arriving at the high-growth firm. *Journal of Business Venturing 18(2)*, 189-216.

Dess, G., & Beard, D. (1984). Dimensions of organizational task environments. *Administrative Science Quarterly*, 52-73.

Dess, G., & Lumpkin, G. (2005). The role of entrepreneurial orientation in stimulating effective corporate entrepreneurship. *Academy of Management Perspectives 19(1)*, 147-156.

Dickson, P., & Giglierano, J. (1986). Missing the boat and sinking the boat: A conceptual model of entrepreneurial risk. *The Journal of Marketing 50*, 58-70.

Dill, W. (1958). Environment as an influence on managerial autonomy. *Administrative science Quarterly 2*, 409-443.

Dimitratos, P., Lioukas, S., & Carter, S. (2004). The relationship between entrepreneurship and international performance: the importance of domestic environment. *International Business Review 13(1)*, 19-41.

Dooley, R., Fowler, D., & Miller, A. (1996). The benefits of strategic homogeneity and strategic heterogeneity: Theoretical and empirical evidence resolving past differences. *Strategic Management Journal 17*, 293-305.

Doran, G., & Gunn, J. (2002). Decision making in high-tech firms: perspectives of three executives. *Business Horizons 45(6)*, 7-16.

Doty, D., Glick, W., & Huber, G. (1993). Fit, equifinality, and organizational effectiveness: A test of two configurational theories. *Academy of Management Journal 36(6)*, 1196-1250.

Downs, G., & Mohr, L. (1976). Conceptual issues in the study of innovation. *Administrative Science Quarterly 21*, 700-714.

Dreyer, B., & Grønhaug, K. (2004). Uncertainty, flexibility, and sustained competitive advantage. *Journal of Business Research 57(5)*, 484-494.

Drori, I., Honig, B., & Wright, M. (2009). Transnational entrepreneurship: An emergent field of study. *Entrepreneurship Theory and Practice 33(5)*, 1001-1022.

Duriau, V., Reger, R., & Pfarrer, M. (2007). A content analysis of the content analysis literature in organization studies: Research themes, data sources, and methodological refinements. *Organizational Research Methods 10(1)*, 5-34.

Edelman, L., Manolova, T., & Brush, C. (2009). Still blinded by the cites: Has there been progress in entrepreneurship research. *In paper at the Academy of Management Annual Meeting, Chicago, IL*, 9-11.

Edmond, V., & Wiklund, J. (2010). The historic roots of entrepreneurial orientation research. *The Historical Foundations of Entrepreneurship Research*, 142-160.

Edwards, J. (2001). Multidimensional constructs in organizational behavior research: An integrative analytical framework. *Organizational Research Methods 4(2)*, 144-192.

Eisenhardt, K. (1989). Making fast strategic decisions in high-velocity environments. *Academy of Management Journal 32(3)*, 543-576.

Emery, F., & Trist, E. (1965). The causal texture of organizational environments. *Human Relations 18(1)*, 21-32.

Engel, G. (1970). Professional autonomy and bureaucratic organization. *Administrative Science Quarterly 15(1)*, 12-21.

Engelen, A., Neumann, C., & Schwens, C. (2015). “Of course I can”: The effect of CEO overconfidence on entrepreneurially oriented firms. *Entrepreneurship Theory and Practice 39(5)*, 1137-1160.

Farjoun, M. (2002). Towards an organic perspective on strategy. *Strategic Management Journal 23(7)*, 561-594.

Fast, N. D. (1981). Pitfalls of corporate venturing. *Research Management 24(4)*, 21-24.

Flamholtz, E., & Randle, Y. (2012). *Growing pains: Transitioning from an entrepreneurship to a professionally managed firm.* New York, USA: John Wiley & Sons.

Floyd, S., & Lane, P. (2000). Strategizing throughout the organization: Managing role conflict in strategic renewal. *Academy of Management Review 25*, 154–177.

Floyd, S., & Wooldridge, B. (1999). Knowledge creation and social networks in corporate entrepreneurship: The renewal of organizational capability. *Entrepreneurship Theory and Practice 23(3)*, 123–143.

Friedlander, F., & Brown, L. (1974). Organization Development. *Annual Review of Psychology 25*, 313-341.

Galbraith, J. (1973). *Designing complex organizations.* Reading, USA: Addison-Wesley Longman Publishing Co.

Galbraith, J., & Kazanjian, R. (1986). *Strategy implementation: Structure, Systems, and Process (Vol. 1).* New York, USA: NY: West Publishing Company.

Gali, N. (2018). Effect of Entrepreneurial Orientation on Firm Performance and Failure: A Longitudinal Analysis. *Doctoral dissertation, Durham University*.

Gans, J. S., & Stern, S. (2003). The product market and the market for “ideas”: commercialization strategies for technology entrepreneurs. *Research policy 32(2)*, 333-350.

Gartner, W. (2008). Variations in entrepreneurship. *Small Business Economics 31(4)*, 351-361.

Garud, R., & Nayyar, P. (1994). Transformative capacity: Continual structuring by intertemporal technology transfer. *Strategic Management Journal 15(5)*, 365-385.

Gasse, Y. (1982). Elaborations on the psychology of the entrepreneur. In C. A. Kent. D. L. Sexton. & K. H. Vesper (Eds.). *Encyclopedia oi entrepreneurship*, 209-223.

George, B., & Marino, L. (2011). The epistemology of entrepreneurial orientation: Conceptual formation, modeling, and operationalization. *Entrepreneurship Theory and Practice 35(5)*, 989-1024.

George, G., Wiklund, J., & Zahra, S. (2005). Ownership and the internationalization of small firms. *Journal of Management 31(2)*, 210-233.

Gioia, D., & Chittipeddi, K. (1991). Sensemaking and sensegiving in strategic change initiation. *Strategic Management Journal 12(6)*, 433-448.

Goll, I., & Rasheed, A. (1997). Rational decision-making and firm performance: The moderating role of environment. *Strategic Management Journal 18(7)*, 583-591.

Goodman, R. (1980). Annual reports serving a dual marketing function—Report of a survey. *Public Relations Quarterly 24(S)*, 21-24.

Goosen, C., de Coning, T., & Smit, E. (2002). Corporate entrepreneurship and financial performance: The role of management. *South African Journal of Business Management 33(4)*, 21-28.

Grant, R. M. (1998). *Contemporary Strategy Analysis.* Malden, USA: Blackwell.

Green, K., Covin, J., & Slevin, D. (2008). Exploring the relationship between strategic reactiveness and entrepreneurial orientation: The role of structure–style fit. *Journal of Business Venturing 23(3)*, 356-383.

Greiner, L. (1972). Evolutions and revolutions as organizations grow. *Harvard Business Review 50(4)*, 37-46.

Grewal, R., & Tansuhaj, P. (2001). Building organizational capabilities for managing economic crisis: The role of market orientation and strategic flexibility. *Journal of Marketing 65(2)*, 67-80.

Griffin, M., Neal, A., & Parker, S. (2007). A new model of work role performance: Positive behavior in uncertain and interdependent contexts. *Academy of Management Journal 50(2)*, 327-347.

Gupta, A., & Govindarajan, V. (1991). Knowledge flows and the structure of control within multinational corporations. *Academy of Management Review 16(4)*, 768-792.

Gupta, V., & Wales, W. (2017). Assessing Organisational Performance Within Entrepreneurial Orientation Research: Where Have We Been and Where Can We Go from Here? *The Journal of Entrepreneurship 26(1)*, 1-26.

Gupta, V., Dobratz, C., & Gupta, A. (2014). Entrepreneurial Orientation: Lessons Learned and Future Opportunities. *International Small Business Journal*.

Hackman, J., & Oldham, G. (1976). Motivation through the design of work: Test of a theory. *Organizational Behavior and Human Performance 16(2)*, 250-279.

Hage, J. (1980). *Theories of organizations.* New York, USA: Wiley.

Hair, J., Black, W., Babin, B., Anderson, R., & Tatham, R. (1998). *Multivariate data analysis (Vol. 5, No. 3, pp. 207-219).* Upper Saddle River, NJ, USA: Prentice Hall.

Hanks, S., Watson, C., Jansen, E., & Chandler, G. (1993). Tightening the life-cycle construct: A taxonomic study of growth stage configurations in high-technology organizations. *Entrepreneurship: Theory and Practice 18(2)*, 5-30.

Harris, R. (2004). Organizational task environments: An evaluation of convergent and discriminant validity. *Journal of Management Studies 41(5)*, 857-882.

Hart, S. (1992). An integrative framework for strategy-making processes. *Academy of management review 17(2)*, 327-351.

Hawawini, G., Subramanian, V., & Verdin, P. (2003). Is performance driven by industry-or firm-specific factors? A new look at the evidence. *Strategic Management Journal 24(1)*, 1-16.

Haynie, J., Shepherd, D., Mosakowski, E., & Earley, P. (2010). A situated metacognitive model of the entrepreneurial mindset. *Journal of Business Venturing 25(2)*, 217-229.

Hayton, J. (2005). Promoting corporate entrepreneurship through human resource management practices: A review of empirical research. *Human Resource Management Review 15(1)*, 21–41.

Henderson, R., & Mitchell, W. (1997). The interactions of organizational and competitive influences on strategy and performance. *Strategic Management Journal 18*, 5-14.

Hewett, K., Roth, M., & Roth, K. (2003). Conditions influencing headquarters and foreign subsidiary roles in marketing activities and their effects on performance. *Journal of International Business Studies 34(6)*, 567-585.

Hirsch, P. (1975). Organizational effectiveness and the institutional environment. *Administrative Science Quarterly 20*, 327-344.

Hitt, M., Hoskisson, R., & Ireland, R. (1990). Mergers and acquisitions and managerial commitment to innovation in M-form firms. *Strategic Management Journal 11(4)*, 29-48.

Hofer, C. (1975). Toward a contingency theory of business strategy. *Academy of Management Journal 18(4)*, 784-810.

Hofer, C., & Schendel, D. (1980). *Strategy formulation: Analytical concepts.* St. Paul, USA: West Publishing.

Holden, M., & Lynch, P. (2004). Choosing the appropriate methodology: Understanding research philosophy. *The marketing review 4(4)*, 397-409.

Hollenbeck, J., Ilgen, D., Sego, D., Hedlund, J., Major, D., & Phillips, J. (1995). Multilevel theory of team decision making: Decision performance in teams incorporating distributed expertise. *Journal of Applied Psychology 80(2)*, 292-316.

Holsti, O. (1969). *Content analysis for the social sciences and humanities.* Reading, USA: Addison-Wesley.

Hornsby, J., Kuratko, D., & Montagno, R. (1999). Perception of internal factors for corporate entrepreneurship: A comparison of Canadian and U.S. managers. *Entrepreneurship Theory and Practice 24(2)*, 9–24.

Hornsby, J., Kuratko, D., & Zahra, S. (2002). Middle managers' perception of the internal environment for corporate entrepreneurship: assessing a measurement scale. *Journal of business Venturing 17(3)*, 253-273.

Hoskisson, R. E., Wright, M., Filatotchev, I., & Peng, M. W. (2013). Emerging multinationals from mid-range economies: The influence of institutions and factor markets. *Journal of Management Studies 50(7)*, 1295-1321.

Hughes, M., & Morgan, R. (2007). Deconstructing the relationship between entrepreneurial orientation and business performance at the embryonic stage of firm growth. *Industrial Marketing Management 36(5)*, 651-661.

Hughes, M., Bouncken, R. B., Covin, J. G., Kraus, S., & Rigtering, J. P. (2015). Entrepreneurial Behavior by Employees: Does it Benefit Workplace Performance? *Working Paper*, 1-48.

Hughes, M., Eggers, F., Kraus, S., & Hughes, P. (2015). The relevance of slack resource availability and networking effectiveness for entrepreneurial orientation. *International Journal of Entrepreneurship and Small Business 26(1)*, 116-138.

Hughes, M., Filser, M., Harms, R., Kraus, S., Chang, M., & Cheng, C. (2017). Family firm configurations for high performance: The role of entrepreneurship and ambidexterity. *British Journal of Management*.

Hughes, M., Hughes, P., & Morgan, R. (2007). Exploitative learning and entrepreneurial orientation alignment in emerging young firms: Implications for market and response performance. *British Journal of Management 18(4)*, 359-375.

Hult, G., & Ketchen, D. (2001). Does market orientation matter?: A test of the relationship between positional advantage and performance. *Strategic Management Journal 22(9)*, 899-906.

Hult, G., Hurley, R., & Knight, G. (2004). Innovativeness: Its antecedents and impact on business performance. *Industrial Marketing Management 33(5)*, 429-438.

Hurley, R., & Hult, G. (1998). Innovation, market orientation, and organizational learning: an integration and empirical examination. *The Journal of Marketing*, 42-54.

Ireland, R., Covin, J., & Kuratko, D. (2009). Conceptualizing corporate entrepreneurship strategy. *Entrepreneurship Theory and Practice 33(1)*, 19-46.

Jacobs, D. (1974). Dependency and vulnerability: An exchange approach to the control of organizations. *Administrative science quarterly*, 45-59.

Janssen, O. (2000). Job demands, perceptions of eVort–reward fairness and innovative work behaviour. *Journal of Occupational and Organizational Psychology 73*, 287-302.

Janssen, O., & Van Yperen, N. W. (2004). Employees Goal Orientations, the Quality of Leader-Member Exchange, and the Outcomes of Job Performance and Job Satisfaction. *Academy of Management Journal 47(3)*, 368-384.

Jantunen, A., Puumalainen, K., Saarenketo, S., & Kyläheiko, K. (2005). Entrepreneurial orientation, dynamic capabilities and international performance. *Journal of International Entrepreneurship 3(3)*, 223-243.

Jones, G., & Butler, J. (1992). Managing internal corporate entrepreneurship: An agency theory perspective. *Journal of Management 18(4)*, 733-749.

Jones, G., & Hill, C. (1988). Transaction cost analysis of strategy structure choice. *Strategic Management Journal 9(2)*, 159-172.

Junni, P., Sarala, R., Taras, V., & Tarba, S. (2013). Organizational ambidexterity and performance: A meta-analysis. *The Academy of Management Perspectives 27(4)*, 299-312.

Jurkovich, R. (1974). A core typology of organizational environments. *Administrative Science Quarterly 19*, 380-394.

Kahneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decision under risk. *Econometrica 47*, 263-291.

Kaiser, H. (1960). The application of electronic computers to factor analysis. *Educational and Psychological Measurement 20*, 141–151.

Kanter, R. (1984). *Change masters: Innovation and entrepreneurship in the American corporation.* New York, USA: Simon and Schuster.

Kanter, R. (1988). *When a thousand flowers bloom: structural, collective and social conditions for innovation in organization. In Research in Organizational Behaviour.* Greenwich, UK: Cummings LL. (eds). JAI Press.

Karagozoglu, N., & Brown, W. (1988). Adaptive responses by conservative and entrepreneurial firms. *Journal oi Product Innovation Management 5*, 269-281.

Kaya, N. (2006). The impact of human resource management practices and corporate entrepreneurship on firm performance: evidence from Turkish firms. *The International Journal of Human Resource Management 17(12)*, 2074-2090.

Kazanjian, R. (1988). Relation of dominant problems to stages of growth in technology-based new ventures. *Academy of Management Journal 31(2)*, 257-279.

Kazanjian, R., & Drazin, R. (1987). Implementing internal diversification: Contingency factors for organization. *Academy of Management Review 12*, 342-354.

Kearney, C., Soleimanof, S., & Wales, W. (2017). Examining Facilitative Configurations of Entrepreneurially Oriented Growth: An Information Processing Perspective. *British Journal of Management*, 32-57.

Keil, T. (2002). *External corporate venturing: Strategic renewal in rapidly changing industries.* Praeger Pub Text.

Kemelgor, B. (2002). A comparative analysis of corporate entrepreneurial orientation between selected firms in the Netherlands and the USA. *Entrepreneurship & Regional Development: An International Journal 14(1)*, 67-87.

Kepes, B. (2014, July 05). *Forbes Magazine*. Retrieved January 03, 2015, from HP Goes 'All In' With The Cloud. Again: http://www.forbes.com/sites/benkepes/2014/05/07/hp-goes-all-in-with-the-cloud-again-sigh/

Kessler, E. (2013). *Encyclopedia of management theory.* New York, USA: SAGE Publications.

Ketchen, D., Thomas, J., & Snow, C. (1993). Organizational configurations and performance: A comparison of theoretical approaches. *Academy of Management Journal 36(6)*, 1278-1313.

Khandwalla, P. (1977). *The design of organizations.*

Kiggundu, M. (1981). Task interdependence and the theory of job design. *Academy of Management Review 6(3)*, 499-508.

Kimberly, J. (1981). Managerial innovation. In P. C. Nystrom & W. H. Starbuck (Eds.). *Handbook of Organizational Design 1*, 84-104.

King, A., & Zeithaml, C. (2001). Competencies and firm performance: Examining the causal ambiguity paradox. *Strategic Management Journal 22(1)*, 75-99.

Kirchhoff, B. (1977). Organization effectiveness measurement and policy research. *Academy of Management Review 2(3)*, 347-355.

Klakegg, O. (2016). Ontology and epistemology. *Designs, Methods and Practices for Research of Project Management*, 87-96.

Kogan, N., & Wallach, M. (1964). *Risk taking: A study in cognition and personality.* New York, USA: Holt, Rinehart & Winston.

Konovsky, M., & Pugh, S. (1994). Citizenship behavior and social exchange. *Academy of Management Journal 37(3)*, 656-669.

Kraus, S., Rigtering, J., Hughes, M., & Hosman, V. (2012). Entrepreneurial orientation and the business performance of SMEs: a quantitative study from the Netherlands. *Review of Managerial Science 6(2)*, 161-182.

Krauss, S., Frese, M., Friedrich, C., & Unger, J. (2005). Entrepreneurial orientation: A psychological model of success among southern African small business owners. *European Journal of Work and Organizational Psychology 14(3)*, 315-344.

Kreiser, P. M., Marino, L. D., & Weaver, K. M. (2002). Reassessing the environment-EO link: the impact of environmental hostility on the dimensions of entrepreneurial orientation. *Academy of Management Proceedings 1*, G1-G6.

Kreiser, P., & Davis, J. (2010). Entrepreneurial orientation and firm performance: The unique impact of innovativeness, proactiveness, and risk-taking. *Journal of small business & entrepreneurship, 23(1)*, 39-51.

Krippendorff, K. (2004). *Content analysis: An introduction to its methodology.* Thousand Oaks, USA: Sage.

Kumar, N., Stern, L., & Anderson, J. (1993). Conducting interorganizational research using key informants. *Academy of management journal 36(6)*, 1633-1651.

Kuratko, D., Ireland, R., Covin, J., & Hornsby, J. (2005). A model of middle-level managers' entrepreneurial behavior. *Entrepreneurship Theory and Practice 29*, 699–716.

Lawrence, P., & Lorsch, J. (1967). *Organization and environment.* Cambridge, USA: Harvard University Press.

Levie, J., & Lichtenstein, B. (2010). A terminal assessment of stages theory: Introducing a dynamic states approach to entrepreneurship. *Entrepreneurship Theory and Practice 34(2)*, 317-350.

Lieberman, M., & Montgomery, D. (1988). First-mover advantages. *Strategic Management Journal 9(S1)*, 41-58.

Lieberson, S., & O'Connor, J. (1972). Leadership and organizational performance: A study of large corporations. *American Sociological Review*, 117-130.

Lumpkin, G. T., & Dess, G. G. (1996). Clarifying the entrepreneurial orientation construct and linking it to performance. *Academy of Management Review 21(1)*, 135-172.

Lumpkin, G. T., Brigham, K. H., & Moss, T. W. (2010). Long-term orientation: Implications for the entrepreneurial orientation and performance of family businesses. *Entrepreneurship and Regional Development 22(3-4)*, 241-264.

Lumpkin, G., & Dess, G. (2001). Linking two dimensions of entrepreneurial orientation to firm performance: The moderating role of environment and industry life cycle. *Journal of Business Venturing 16*, 429–451.

Lumpkin, G., Cogliser, C., & Schneider, D. (2009). Understanding and measuring autonomy: An entrepreneurial orientation perspective. *Entrepreneurship Theory and Practice 33*, 47–69.

Lyon, D., Lumpkin, G., & Dess, G. (2000). Enhancing entrepreneurial orientation research: Operationalizing and measuring a key strategic decision making process. *Journal of Management 26(5)*, 1055-1085.

MacMillan, I. (1982). Seizing competitive initiative. *Journal of Business Strategy 2(4)*, 43-57.

MacMillan, I., & Day, D. (1987). Corporate ventures into industrial markets: Dynamics of aggressive entry. *Journal of Business Venturing 2(1)*, 29-39.

MacMillan, I., & Jones, P. (1984). Designing organizations to compete. *The Journal of Business Strategy 4(4)*, 11-26.

Magaji, M. S., Baba, R., & Entebang, H. (2017). Entrepreneurial orientation and financial performance of Nigerian SMES. *Journal of Management and Training for Industries 4(1)*, 25.

Maidique, M., & Patch, P. (1982). Corporate strategy and technological policy. *Readings in the Management of Innovation*, 273-285.

Makadok, R., Burton, R., & Barney, J. (2018). A practical guide for making theory contributions in strategic management. *Strategic Management Journal 39(6)*, 1530-1545.

Malecki, E. (1991). *Technology and Economic Development.* New York, USA: John Wiley and Sons.

Marczyk, G., DeMatteo, D., & Festinger, D. (2017). *Essentials of research design and methodology.* John Wiley.

Markusen, A., Hall, P., & Glasmeier, A. (1986). *High tech America: the what, how, where, and why of the sunrise industries.* Boston, USA: Allen & Unwin.

Martins, I., & Rialp, A. (2013). Entrepreneurial Orientation, Environmental Hostility and SMEs Profitability: A Contingency Approach. *Cuadernos de Gestión, 13(2)*, 67–88.

Mason, E. (1939). Price and production policies of large-scale enterprise. *The American Economic Review 29(1)*, 61-74.

Matsuno, K., Mentzer, J., & Özsomer, A. (2002). The effects of entrepreneurial proclivity and market orientation on business performance. *Journal of Marketing 66(3)*, 18-32.

May, T. (2011). *Social Research.* UK: McGraw-Hill Education.

McClelland, D. (1961). *The achieving society.* New Jersey, USA: D. Van Norstrand Company.

McDougall, P., & Oviatt, B. (2000). International entrepreneurship: the intersection of two research paths. *Academy of management Journal 43(5)*, 902-906.

McGrath, R., & MacMillan, I. (2000). *The entrepreneurial mindset: Strategies for continuously creating opportunity in an age of uncertainty.* Boston, USA: Harvard Business Press.

McKelvie, A., & Wiklund, J. (2010). Advancing firm growth research: A focus on growth mode instead of growth rate. *Entrepreneurship Theory and Practice 34(2)*, 261-288.

McKelvie, A., Wiklund, J., & Davidsson, P. (2006). A resource-based view on organic and acquired growth. *Advances in Entrepreneurship, Firm Emergence and Growth 9*, 175-194.

McKenny, A., Aguinis, H., Short, J., & Anglin, A. (2016). What doesn't get measured does exist: Improving the accuracy of computer-aided text analysis. *Journal of Management*, 1-23.

McKenny, A., Short, J., & Payne, G. (2013). Using computer-aided text analysis to elevate constructs: An illustration using psychological capital. *Organizational Research Methods 16(1)*, 152-184.

Mendelson, H., & Pillai, R. (1999). Industry clockspeed: Measurement and operational implications. *Manufacturing & Service Operations Management 1(1)*, 1-20.

Merton, R. (1976). *Sociological ambivalence and other essays.* New York, USA: Simon and Schuster.

Merz, G., & Sauber, M. (1995). Profiles of managerial activities in small firms. *Strategic Management Journal 16(7)*, 551-564.

Meyer, J., Allen, N., & Smith, C. (1993). Commitment to organizations and occupations: Extension and test of a three-component conceptualization. *Journal of Applied Psychology 78(4)*, 538.

Michalisin, M. (2001). Validity of annual report assertions about innovativeness: an empirical investigation. *Journal of Business Research 53(3)*, 151-161.

Miles, M., & Covin, J. (2002). Exploring the practice of corporate venturing: Some common forms and their organizational implications. *Entrepreneurship: Theory and Practice 26(3)*, 21-41.

Miles, R., Snow, C., & Pfeffer, J. (1974). Organization-environment: concepts and issues. *Industrial Relations: A Journal of Economy and Society 13(3)*, 244-264.

Miles, R., Snow, C., Meyer, A., & Coleman, H. (1978). Organizational strategy, structure, and process. *Academy of Management Review 3(3)*, 546-562.

Miller, A., & Camp, B. (1986). Exploring determinants of success in corporate ventures. *Journal of Business Venturing 1(1)*, 87-105.

Miller, D. (1983). The correlates of entrepreneurship in three types of firms. *Management Science 29*, 770-791.

Miller, D. (1987). Strategy making and structure: Analysis and implications for performance. *Academy of Management Journal 30*, 7-32.

Miller, D. (1988). Relating Porter's business strategies to environment and structure: Analysis and performance implications. *Academy of Management Journal 31(2)*, 280-308.

Miller, D. (1990). Organizational configurations: Cohesion, change, and prediction. *Human Relations 43(8)*, 771-789.

Miller, D. (1992). Environmental fit versus internal fit. *Organization Science 3(2)*, 159-178.

Miller, D. (1996). Configurations revisited. *Strategic Management Journal 17(7)*, 505-512.

Miller, D. (2011). Miller (1983) revisited: A reflection on EO research and some suggestions for the future. *Entrepreneurship Theory and Practice 35(3)*, 873-894.

Miller, D., & Chen, M. (1994). Sources and consequences of competitive inertia: A study of the US airline industry. *Administrative Science Quarterly 39*, 1-23.

Miller, D., & Friesen, P. (1978). Archetypes of strategy formulation. *Management Science*, 921-933.

Miller, D., & Friesen, P. (1982). Innovation in conservative and entrepreneurial firms: Two models of strategic momentum. *Strategic Management Journal 3(1)*, 1-25.

Mintzberg, H. (1973). Strategy-making in three modes. *California Management Review 16(2)*, 44-53.

Mintzberg, H. (1979). *The structuring of organizations.* New Jersey, USA: Prentice-Hall.

Mintzberg, H., & Waters, J. (1985). Of strategies, deliberate and emergent. *Strategic Management Journal 6*, 257-272.

Monsen, E. (2005). Employees do matter: Autonomy, teamwork and corporate entrepreneurial culture. Doctoral dissertation, University of Colorado.

Monsen, E., & Boss, R. (2004). Mapping the differential impact of entrepreneurial orientation on performance in a healthcare organization. *Babson-Kauffman Entrepreneurship Research Conference*.

Monsen, E., & Boss, R. (2009). The impact of strategic entrepreneurship inside the organization: Examining job stress and employee retention. *Entrepreneurship Theory and Practice 33(1)*, 71-104.

Monsen, E., Patzelt, H., & Saxton, T. (2010). Beyond Simple Utility: Incentive Design and Trade-Offs for Corporate Employee-Entrepreneurs. *Entrepreneurship Theory and Practice 34(1)*, 105-130.

Morgan, R., & Strong, C. (2003). Business performance and dimensions of strategic orientation. *Journal of Business Research 56(3)*, 163-176.

Morris, M., & Paul, G. (1987). The relationship between entrepreneurship and marketing in established firms. *Journal of Business Venturing 2(3)*, 247-259.

Morris, M., Webb, J., & Franklin, R. (2011). Understanding the manifestation of entrepreneurial orientation in the nonprofit context. *Entrepreneurship Theory and Practice 35(5)*, 947-971.

Morris, R. (1994). Computerized content analysis in management research: A demonstration of advantages & limitations. *Journal of Management 20(4)*, 903-931.

Mosakowski, E. (1998). Entrepreneurial resources, organizational choices, and competitive outcomes. *Organization Science 9*, 625–643.

Murphy, G., Trailer, J., & Hill, R. (1996). Measuring performance in entrepreneurship research. *Journal of Business Research 36(1)*, 15-23.

Naldi, L., Nordqvist, M., Sjöberg, K., & Wiklund, J. (2007). Entrepreneurial orientation, risk taking, and performance in family firms. *Family business review 20(1)*, 33-47.

Naman, J., & Slevin, D. (1993). Entrepreneurship and the concept of fit: A model and empirical tests. *Strategic Management Journal 14(2)*, 137-153.

Nayyar, P., & Kazanjian, R. (1993). Organizing to attain potential benefits from information asymmetries and economies of scope in related diversified firms. *Academy of Management Review 18(4)*, 735-759.

Noble, C., Sinha, R., & Kumar, A. (2002). Market orientation and alternative strategic orientations: a longitudinal assessment of performance implications. *Journal of Marketing 66(4)*, 25-39.

Normann, R. (1971). Organizational innovativeness: Product variation and reorientation. *Administrative Science Quarterly 16(2)*, 203-215.

Organ, D. (1988). *Organizational citizenship behavior: The good soldier syndrome.* Lexington, USA: Lexington Books/DC Heath and Com.

Outhwaite, W. (1987). *New philosophies of social science: realism, hermeneutics and critical theory.* Macmillan International Higher Education.

Oxford. (2016, March 22). *Oxford Dictionaries*. Retrieved March 22, 2016, from http://www.oxforddictionaries.com/: http://www.oxforddictionaries.com/definition/english

Patel, P., Kohtamäki, M., Parida, V., & Wincent, J. (2015). Entrepreneurial orientation-as-experimentation and firm performance: The enabling role of absorptive capacity. *Strategic Management Journal 36(11)*, 1739-1749.

Paytas, J., & Berglund, D. (2004). Technology industries and occupations for NAICS industry data. *Pittsburgh: Carnegie Mellon Center for Economic Development and State Science and Technology Institute*, 1-7.

Pearce, I., John, A., Fritz, D., & Davis, P. (2010). Entrepreneurial orientation and the performance of religious congregations as predicted by rational choice theory. *Entrepreneurship Theory and Practice 34(1)*, 219-248.

Penrose, E. (1995). *The Theory of the Growth of the Firm.* USA: Oxford University Press.

Peters, T., & Waterman, R. (1982). *In search of excellence.* New York, USA: Harper & Row.

Peterson, S., & Bredow, T. (2009). *Middle range theories: application to nursing research.* Lippincott Williams & Wilkins.

Pettigrew, A. (1992). The character and significance of strategy process research. *Strategic Management Journal 13(S2)*, 5-16.

Pfeffer, J., & Salancik, G. (2003). *The external control of organizations: A resource dependence perspective.* Stanford, USA: Stanford University Press.

Pinchot III, G. (1985). Intrapreneuring: Why you don't have to leave the corporation to become an entrepreneur. *University of Illinois at Urbana-Champaign's Academy for Entrepreneurial Leadership Historical Research Reference in Entrepreneurship*.

Pitts, R., & Hopkins, H. (1982). Firm diversity: Conceptualization and measurement. *Academy of Management Review 7(4)*, 620-629.

Ployhart, R., & Moliterno, T. (2011). Emergence of the human capital resource: A multilevel model. *Academy of Management Review 36(1)*, 127-150.

Porter, M. (1981). The contributions of industrial organization to strategic management. *Academy of Management Review 6(4)*, 609-620.

Porter, M. (1985). *Competitive Advantage.* New York, USA: Free Press.

Porter, M. (2008). The five competitive forces that shape strategy. *Harvard Business School Publishing*.

QueenslandGovernment. (2015, September 29). *https://www.business.qld.gov.au*. Retrieved March 30, 2016, from Why business innovation is important: https://www.business.qld.gov.au/business/business-improvement/becoming-innovative-business/why-business-innovation-important

Quinn, J. (1979). Technological innovation, entrepreneurship, and strategy. *Sloan Management Review 20(3)*, 19.

Quinn, R., & Cameron, K. (1983). Organizational life cycles and shifting criteria of effectiveness: Some preliminary evidence. *Management Science 29(1)*, 33-51.

Rauch, A., Wiklund, J., Lumpkin, G. T., & Frese, M. (2009). Entrepreneurial orientation and business performance: An assessment of past research and suggestions for the future. *Entrepreneurship: Theory & Practice 33 (3)*, 761-787.

Rodale, J. (1978). *The synonym finder.* Emmaus, USA: Rodale Press.

Rosenberg, M. (1968). *The logic of survey analysis.* New York, USA: Basic Books.

Rosenberg, S., Schnurr, P., & Oxman, T. (1990). Content analysis: A comparison of manual and computerized systems. *Journal of personality assessment 54(1-2)*, 298-310.

Rosenbusch, N., Rauch, A., & Bausch, A. (2013). The mediating role of entrepreneurial orientation in the task environment–performance relationship: A meta-analysis. *Journal of Management 39(3)*, 633-659.

Rumelt, R. (1982). Diversification strategy and profitability. *Strategic Management Journal 3(4)*, 359-369.

Rumelt, R., Schendel, D., & Teece, D. (1994). *Fundamental issues in strategy: A research agenda.* Boston, USA: Harvard Business School Press.

SBA. (2016, February 26). *Summary of Size Standards by Industry Sector*. Retrieved July 30, 2016, from https://www.sba.gov: https://www.sba.gov/contracting/getting-started-contractor/make-sure-you-meet-sba-size-standards/summary-size-standards-industry-sector

Schendel, D. (1994). Introduction to 'Competitive Organizational Behavior: Toward an Organizationally-Based Theory of Competitive Advantage'. *Strategic Management Journal 15(S1)*, 1-4.

Schendel, D., & Hofer, C. (1979). *Strategic management: A new view of business policy and planning.* Boston, USA: Little, Brown.

Scherer, F. (1980). *Industrial Market Structure and Economic Performance.* Boston, USA: Houghton-Mifflin.

Schillo, S. R. (2011, November 01). *Entrepreneurial Orientation and Company Performance: Can the Academic Literature Guide Managers?* Retrieved April 08, 2016, from http://timreview.ca/: http://timreview.ca/article/497

Schollhammer, H. (1982). Internal corporate entrepreneurship. *Encyclopedia of Entrepreneurship 209*, 223.

Schueler, J., Schneider, S., Wales, W. J., & Baum, M. (2018). Testing Ontologies of Entrepreneurial Orientation. *Academy of Management Proceedings 1*, 11357.

Schumpeter, J. (1934). *The theory of economic development.* Cambridge, USA: Harvard University Press.

Schumpeter, J. (1942). *Capitalism, socialism, and democracy.* New York, USA: Harper & Brothers.

Scott, W. R. (1981). *Organizations: Rational, Natural, and Open Systems. Englewood Cliffs.* New Jersay, USA: Prentice-Hall.

sec.gov.com. (2016, November 22). *https://www.sec.gov/answers/form10k.htm*. Retrieved November 22, 2016, from Form 10-K: https://www.sec.gov/answers/form10k.htm

Shane, S. (1994). Why do rates of entrepreneurship vary over time? *Academy of Management Best Paper Proceedings*, 90-94.

Shapero, A. (1975). The displaced, uncomfortable entrepreneur. *Psychology Today 9(6)*, 83-88.

Shirokova, G., Bogatyreva, K., Beliaeva, T., & Puffer, S. (2016). Entrepreneurial orientation and firm performance in different environmental settings: contingency and configurational approaches. *Journal of Small Business and Enterprise Development 23(3)*, 703-727.

Short, J., & Palmer, T. (2003). Organizational performance referents: An empirical examination of their content and influences. *Organizational Behavior and Human Decision Processes 90(2)*, 209-224.

Short, J., Broberg, J., Cogliser, C., & Brigham, K. (2009). Construct validation using computer-aided text analysis (CATA): An illustration using entrepreneurial orientation. *Organizational Research Methods*, 320-347.

Short, J., Payne, G., & Ketchen, D. (2008). Research on organizational configurations: Past accomplishments and future challenges. *Journal of Management 22*, 9-24.

Short, J., Payne, G., Brigham, K., Lumpkin, G., & Broberg, J. (2009). Family firms and entrepreneurial orientation in publicly traded firms a comparative analysis of the S&P 500. *Family Business Review 22(1)*, 9-24.

Shrivastava, P., & Grant, J. (1985). Empirically derived models of strategic decision-making processes. *Strategic Management Journal 6(2)*, 97-113.

siblisresearch.com. (2016, November 01). *http://siblisresearch.com/*. Retrieved November 01, 2016, from US/S&P 500 Companies – Historical Revenues (turnover): http://siblisresearch.com/data/revenues-sp-100-companies/

Silverman, D., & Gubrium, J. (2006). *Qualitative Research Practice.* London, UK: Concise Paperback Edition.

Sitkin, S., & Pablo, A. (1992). Reconceptualizing the determinants of risk behavior. *Academy of Management Review 17(1)*, 9-38.

Slater, S., & Narver, J. (1995). Market orientation and the learning organization. *The Journal of Marketing 59*, 63-74.

Slater, S., & Narver, J. (2000). The positive effect of a market orientation on business profitability: A balanced replication. *Journal of Business Research 48(1)*, 69-73.

Slater, S., & Olson, E. (2002). A fresh look at industry and market analysis. *Business Horizons 45(1)*, 15-22.

Slevin, D., & Covin, J. (1990). Juggling entrepreneurial style and organizational structure. *MIT Sloan Management Review 31(2)*, 43-53.

Slovic, P., Fischhoff, B., & Lichtenstein, S. (1980). *Facts versus fears: Understanding perceived risk. In D. Kahneman, P. Slovic, & A. Tversky (Eds,), Judgment under uncertainty: Heuristics and biases.* Cambridge, UK: Cambridge University Press.

Smart, D., & Conant, J. (1994). Entrepreneurial orientation, distinctive marketing competencies and organizational performance. *Journal of Applied Business Research 10(3)*, 28-38.

Smith, P. (1976). Behaviors, results, and organizational effectiveness: The problem of criteria. *Handbook of Industrial and Organizational Psychology*, 745-775.

Spanos, Y., & Lioukas, S. (2001). An examination into the causal logic of rent generation: contrasting Porter's competitive strategy framework and the resource-based perspective. *Strategic Management Journal 22(10)*, 907-934.

Spreitzer, G. (1995). Psychological empowerment in the workplace: Dimensions, measurement, and validation. *Academy of management Journal 38(5)*, 1442-1465.

Stam, W., & Elfring, T. (2008). Entrepreneurial orientation and new venture performance: The moderating role of intra-and extraindustry social capital. *Academy of Management Journal 51(1)*, 97-111.

Starbuck, W. (1976). *Organizations and their environments. MD Dunnette (Editor), Handbook of Industrial and Organizational Psychology.* Chicago, USA: Rand McNally.

Stetz, P., Howell, R., Stewart, A., Blair, J., & Fottler, M. (2000). Multidimensionality of entrepreneurial firm-level processes: do the dimensions covary? *Frontiers of Entrepreneurship Research*, 459-469.

Stevenson, R. (2001). In praise of dumb clerks: Computer-assisted content analysis. *Progress in Communication Sciences*, 3-12.

Stoel, M., & Muhanna, W. (2009). IT capabilities and firm performance: A contingency analysis of the role of industry and IT capability type. *Information & Management 46(3)*, 181-189.

Stopford, J., & Baden-Fuller, C. (1994). Creating corporate entrepreneurship. *Strategic Management Jorunal 15*, 521–536.

Swierczek, F., & Ha, T. (2003). Entrepreneurial orientation, uncertainty avoidance and firm performance: an analysis of Thai and Vietnamese SMEs. *The International Journal of Entrepreneurship and Innovation 4(1)*, 46-58.

Tan, J., & Tan, D. (2005). Environment–strategy co-evolution and co-alignment: a staged model of Chinese SOEs under transition. *Strategic Management Journal 26(2)*, 141-157.

Tang, J., Tang, Z., Marino, L., Zhang, Y., & Li, Q. (2008). Exploring an inverted U-Shape relationship between entrepreneurial orientation and performance in Chinese ventures. *Entrepreneurship Theory and Practice 32(1)*, 219-239.

Teece, D. (1984). Economic Analysis and Strategic Management. *California Management Review 26(3)*, 87-110.

Thaler, R., & Johnson, E. (1990). Gambling with the house money and trying to break even: The effects of prior outcomes on risky choices. *Management Science 36*, 643-660.

Thompson, C. (1988). Some problems with R&D/SE&T-based definitions of high technology industry. *Area 20*, 265-277.

Thompson, J. (1967). *Organizations in action: Social science bases of administrative theory.* New York, USA: Transaction publishers.

Thornhill, S., & Amit, R. (2003). Learning about failure: Bankruptcy, firm age, and the resource-based view. *Organization Science 14(5)*, 497-509.

Traynor, K., & Traynor, S. (2004). A comparison of marketing approaches used by high-tech firms: 1985 versus 2001. *Industrial Marketing Management 33(5)*, 457-461.

Trist, E., & Bamforth, K. (1951). Some social and psychological consequences of the Longwall method. *Human Relations 4(3)*, 3-38.

Tushman, M., & O'Reilly, C. (1996). The ambidextrous organizations: managing evolutionary and revolutionary change. *California Management Review 38(4)*, 8-30.

Van de Ven, A., & Drazin, R. (1984). The Concept of Fit in Contingency. *Research in Organizational Behavior 7*, 333-365.

Venkatraman, N. (1989). Strategic orientation of business enterprises: The construct, dimensionality, and measurement. *Management Science 35(8)*, 942-962.

Venkatraman, N., & Ramanujam, V. (1986). Measurement of business performance in strategy research: A comparison of approaches. *Academy of Management Review 11(4)*, 801-814.

Vij, S., & Bedi, H. (2012). Relationship between entrepreneurial orientation and business performance: A review of literature. *The IUP Journal of Business Strategy (9)*, 17-31.

Volberda, H., Baden-Fuller, C., & Van Den Bosch, F. (2001). Mastering strategic renewal: Mobilising renewal journeys in multi-unit firms. *Long Range Planning 34(2)*, 159-178.

Von Hippel, E. (1977). Successful and failing internal corporate ventures: An empirical analysis. *Industrial Marketing Management 6(3)*, 163-174.

Vorhies, D., & Morgan, N. (2003). A configuration theory assessment of marketing organization fit with business strategy and its relationship with marketing performance. *Journal of Marketing 67(1)*, 100-115.

Vorhies, D., & Morgan, N. (2005). Benchmarking marketing capabilities for sustainable competitive advantage. *Journal of Marketing 69(1)*, 80-94.

Voss, Z., Voss, G., & Moorman, C. (2005). An empirical examination of the complex relationships between entrepreneurial orientation and stakeholder support. *European Journal of Marketing 39(9/10)*, 1132-1150.

Wakkee, I., Elfring, T., & Monaghan, S. (2010). Creating entrepreneurial employees in traditional service sectors. *International Entrepreneurship and Management Journal 6(1)*, 1-21.

Wales, B. (2016, March 11). *http://www.entrepreneurialorientation.com/*. Retrieved from Research on Entrepreneurial Orientation: http://www.entrepreneurialorientation.com/

Wales, J. W. (2015). Entrepreneurial orientation: A review and synthesis of promising research directions. *International Small Business Journal*, 1-13.

Wales, W. (2016). Entrepreneurial orientation: A review and synthesis of promising research directions. *International Small Business Journal 34(1)*, 3-15.

Wales, W., Gupta, V. K., & Moussa, F. (2013). Empirical research on entrepreneurial orientation: An assessment and suggestions for future research. *International Small Business Journal 31(4)*, 357-383.

Wales, W., Monsen, E., & McKelvie, A. (2011). The organizational pervasiveness of entrepreneurial orientation. *Entrepreneurship: Theory & Practice 35 (5)*, 895-923.

Walter, A., Auer, M., & Ritter, T. (2006). The impact of network capabilities and entrepreneurial orientation on university spin-off performance. *Journal of Business Venturing 21(4)*, 541-567.

Wang, C. L. (2008). Entrepreneurial orientation, learning orientation, and firm performance. *Entrepreneurship theory and practice 32(4)*, 635-657.

Wang, C. L., & Chugh, H. (2010). Entrepreneurial learning: past research and future challenges (summary). *Frontiers of Entrepreneurship Research 30(9)*, 9.

Wangrow, D., Schepker, D., & Barker III, V. (2015). Managerial discretion: An empirical review and focus on future research directions. *Journal of Management 41(1)*, 99-135.

Weber, R. (1990). *Basic content analysis.* Thousand Oaks, USA: Sage.

Wiklund, J. (1999). The sustainability of the entrepreneurial orientation–performance relationship. *Entrepreneurship Theory and Practice 24(1)*, 37-48.

Wiklund, J., & Shepherd, D. (2003). Knowledge-based resources, entrepreneurial orientation, and the performance of small and medium-sized businesses. *Strategic Management Journal 24*, 1307–1314.

Wiklund, J., & Shepherd, D. (2005). Entrepreneurial orientation and small business performance: a configurational approach. *Journal of business venturing 20(1)*, 71-91.

Wiklund, J., & Shepherd, D. (2011). Where to From Here? EO-as-Experimentation, Failure, and Distribution of Outcomes. *Entrepreneurship Theory and Practice 35(5)*, 925-946.

Wiklund, J., Davidsson, P., Audretsch, D., & Karlsson, C. (2011). The future of entrepreneurship research. *Entrepreneurship Theory and Practice 35(1)*, 1-9.

Williams, C. (2018). *Venturing in International Firms: Contexts and Cases in a High-Tech World.* Routledge.

Williams, C., & Lee, S. (2009). Resource allocations, knowledge network characteristics and entrepreneurial orientation of multinational corporations. *Research Policy 38(8)*, 1376-1387.

Woo, C., & Cooper, A. (1981). Strategies of effective low share businesses. *Strategic Management Journal 2(3)*, 301-318.

Wright, B., & Cordery, J. (1999). Production uncertainty as a contextual moderator of employee reactions to job design. *Journal of Applied Psychology 84(3)*, 456-463.

Wright, P., Kroll, M., Pray, B., & Lado, A. (1995). Strategic orientations, competitive advantage, and business performance. *Journal of Business Research 33(2)*, 143-151.

Zahra, S. (1991). Predictors and financial outcomes of corporate entrepreneurship: An explorative study. *Journal of Business Venturing 6*, 259-285.

Zahra, S. (1993). A conceptual model of entrepreneurship as firm behavior: A critique and extension. *Entrepreneurship: Theory and Practice 17(4)*, 5-22.

Zahra, S. (1996). Governance, Ownership, and Corporate Entrepreneurship: The Moderating Impact of Industry Technological Opportunities. *Acadamy of Management Journal 39(6)*, 1713-1735.

Zahra, S. (2005). A theory of international new ventures: a decade of research. *Journal of International Business Studies 36(1)*, 20-28.

Zahra, S., & Covin, J. (1993). Business strategy, technology policy and firm performance. *Strategic Management Journal 14*, 451-478.

Zahra, S., & Covin, J. (1995). Contextual influences on the corporate entrepreneurship–performance relationship: A longitudinal analysis. *Journal of Business Venturing 10*, 43-58.

Zahra, S., & Garvis, D. (2000). International corporate entrepreneurship and firm performance: The moderating effect of international environmental hostility. *Journal of Business Venturing 15(5)*, 469-492.

Zahra, S., & Neubaum, D. (1998). Environmental adversity and the entrepreneurial activities of new ventures. *Journal of developmental entrepreneurship 3(2)*, 123.

Zahra, S., & Wright, M. (2011). Entrepreneurship's next act. *The Academy of Management Perspectives 25(4)*, 67-83.

Zahra, S., Jennings, D., & Kuratko, D. (1999). The antecedents and consequences of firm-level entrepreneurship: The state of the field. *Entrepreneurship: Theory and Practice 24(2)*, 45-45.

Zahra, S., Sapienza, H., & Davidsson, P. (2006). Entrepreneurship and dynamic capabilities: A review, model and research agenda. *Journal of Management Studies 43*, 917-955.

Zahra, S., Wright, M., & Abdelgawad, S. (2014). Contextualization and the advancement of entrepreneurship research. *International Small Business Journal 32*, 479-500.

Zikmund, W., Babin, B., Carr, J., & Griffin, M. (2013). *Business research methods.* Cengage Learning.

APPENDICES

Appendix 1: Theoretical Framework: Advancing the Stabilisation of Theorising in EO Research: Structure-Conduct-Performance (SCP) Model

The selection of a scholarly work's research theory should be driven by its aims, contexts, and existing knowledge. Despite the literature being equipped with several promising theories for the conceptual development of an EO research study (see section 2.8), only a few of these take industry characteristics into account. Of these, most empirical studies have merely considered them as a control variable. The Structure-Conduct-Performance (SCP) model is advantageous because it treats the industry as a core component of its predictions about firm performance (Farjoun, 2002). Throughout this section, the theoretical lens of the SCP will be presented, concluding with a construction of an EO related framework and the relevant critique for its model.

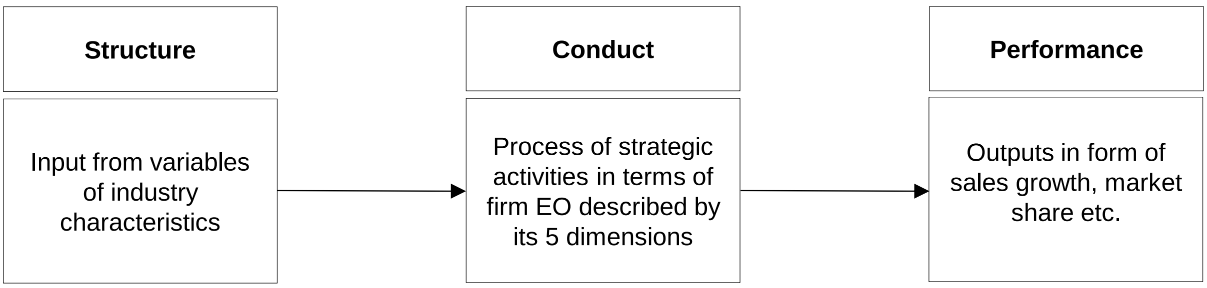
<u>SCP as a Theoretical Lens</u>

SCP takes a mechanistic perspective while its derivative, the Industry Structure model (Porter, 1980), identifies the environment as key to understanding the connection of firm strategy and performance (Bain, 1956; Farjoun, 2002). It is constructed as a causality flow of the industry's structural variables to build the conduct, which includes strategic activities, to then form firm and industry performance. Porter's (1980) model developed this idea further by focusing on the industry that allowed conclusions on possible strategies to improve business performance.

The SCP theory was gradually applied from the 1970s onwards when industrial organisational economics set the main theoretical base for strategic management research and its linkage to firm performance (Hawawini et al., 2003; Rumelt et al., 1994). SCP was one of the initial theories to explore variations in business outcomes (Bain, 1956) by conceptualising how industry structure impacts the conduct as well as firm performance (Bain, 1956). This theory builds upon the structural factors of an industry that may become more homogeneous assuming a firm's inability to act independently (Caves, 1992). Yet, firms may be able to enact distinct and discretionary changes (Hawawini et al., 2003).

SCP Conceptual Development

To guide the development of the theoretical framework, a mechanistic approach is considered since organic views may not be feasible due to their complexity of directions. Moreover, SCP has provided the base for a few EO studies from the industry perspectives. Below's Figure displays a diagrammatic illustration of the SCP theory and its relevant concerns when applied to this study. A theoretical framework may benefit from the SCP theory, which conceptualises the input based on the variables of industry characteristics. These may impact the internal progression of strategic activities that have evolved from the level of the five multi-dimensions of EO to capture possible influences on business performance outputs then.



Theoretical Framework Consideration: Structure-Conduct-Performance (SCP)

Hence, SCP outlines an initial understanding of this thesis' theoretical framework components that best suit its aims and objectives. Here, structure refers to the environmental considerations of industry types and conditions. The conduct section of the SCP processes industry inputs as a firm's ability to translate these into actions that target specific business goals such as sales and market share growth, hence, also impact the manner in which a firm develops strategies to achieve sustained and superior performance (Farjoun, 2002). Therefore, SCP may predict how industry characteristics can push firms to adopt particular strategic postures in order to survive. As indicated previously, the many facets of EO and performance have been closely studied in the past (see section 2.4); considering Porters (1980) suggestion for SCP, the firm-level performance outcome requires to be studied as its enhancement is the overall goal of any strategic activity derived within a firm.

SCP as a mechanistic theory would allow to stabilise and inform corresponding models to evaluate and address variations in business performance outcomes. Awareness of the potential of SCP for this study will contribute to the knowledge regarding EO research and will be the basis for defining a more fine-grained theoretical framework to meet the required aims and contexts best. Such an extension of the SCP model to comply with this study's requirements is crucial as the following restrictions can be reported. Firstly, context-related firm and management factors are ignored due to the presumption that the firm's conduct is only driven by industry input; consequently, top-level managerial actions are out of focus (Mason, 1939; Spanos & Lioukas, 2001). This fact has been criticised since it does not question the reason why firms may differ in their degree of strategic response when facing industry pressures or conditions (e.g., turbulence and munificence). This general ignorance of the inner context of strategy has been reported by scholars in the early years of EO research itself (such as Pettigrew, 1987; Teece, 1984) and does not conform to the previous literature review regarding the many facets of an EO manifestation (see section 2.5 and following). Secondly, the SCP model analyses performance as an overall firm-level measure. This perspective does not present clear indications of the EO's multidimensional impact with regards to specific performance indicators such as financial and non-financial ones. Consequently, the financial performance indicators, in particular, require further investigation (see Lumpkin & Dess, 1996).

Thus, the SCP theory may provide increased insights. However, it is limited by solely including industry input while disregarding the firm considerations. In consequence, the knowledge derived from the SCP model will be augmented by considering contingency and configurational perspectives instead.

Appendix 2: Sample Selection and Classification: Final List of Firms

Categorised by HT versus LT and Availability of Data Source

Firm Ticker Symbol	Firm Name	6-digit NAICS code	Final HT/LT Classification	Letter to Shareholder collected (2012)	10-K Filing collected (2012)
A	AGILENT TECHNOLOGIES INC	334516	HT	x	x
AA	ALCOA INC	331318	LT		x
AAPL	APPLE INC	334220	HT		x
ABBV	ABBVIE INC	325414	HT	x	x
ABC	AMERISOURCEBERGEN CORP	424210	LT	x	x
ABT	ABBOTT LABORATORIES	325412	HT	x	x
ACN	ACCENTURE PLC	541611	HT		x
ADBE	ADOBE SYSTEMS INC	511210	HT		x
ADI	ANALOG DEVICES	334413	HT	x	x
ADM	ARCHER-DANIELS-MIDLAND CO	311225	LT	x	x
ADP	AUTOMATIC DATA PROCESSING	518210	HT	x	x
ADSK	AUTODESK INC	511210	HT	x	x
AEE	AMEREN CORP	221118	LT	x	x
AEP	AMERICAN ELECTRIC POWER CO	221118	LT	x	x
AES	AES CORP	221112	LT	x	x
AET	AETNA INC	524114	LT	x	x
AFL	AFLAC INC	524114	LT	x	x
AGN	ALLERGAN PLC	325412	HT	x	x
AIG	AMERICAN INTERNATIONAL GROUP	524126	LT	x	x
AIV	APARTMENT INVST & MGMT CO	531110	LT	x	x
AIZ	ASSURANT INC	524126	LT	x	x
AKAM	AKAMAI TECHNOLOGIES INC	519130	HT	x	x
ALL	ALLSTATE CORP	524126	LT	x	x
ALTR	ALTERA CORP	334413	HT	x	x
ALXN	ALEXION PHARMACEUTICALS INC	325414	HT	x	x
AMAT	APPLIED MATERIALS INC	333242	HT	x	x
AMGN	AMGEN INC	325414	HT	x	x
AMP	AMERIPRISE FINANCIAL INC	523110	LT	x	x

AMT	AMERICAN TOWER CORP	531120	LT	x	x
AMZN	AMAZON.COM INC	454111	HT	x	x
AN	AUTONATION INC	441110	LT	x	x
ANTM	ANTHEM INC	524114	LT	x	x
AON	AON PLC	524210	LT	x	x
APA	APACHE CORP	211111	HT	x	x
APC	ANADARKO PETROLEUM CORP	211111	HT	x	x
APD	AIR PRODUCTS & CHEMICALS INC	325120	HT	x	x
APH	AMPHENOL CORP	334417	HT	x	x
ARG	AIRGAS INC	423830	LT	x	x
ATI	ALLEGHENY TECHNOLOGIES INC	331491	HT	x	x
AVB	AVALONBAY COMMUNITIES INC	531110	LT	x	x
AVY	AVERY DENNISON CORP	322220	LT	x	x
AXP	AMERICAN EXPRESS CO	522210	LT	x	x
AZO	AUTOZONE INC	441310	LT	x	x
BA	BOEING CO	336411	HT	x	x
BAC	BANK OF AMERICA CORP	522110	LT	x	x
BAX	BAXTER INTERNATIONAL INC	325414	HT	x	x
BBBY	BED BATH & BEYOND INC	442299	LT	x	x
BBT	BB&T CORP	522110	LT	x	x
BBY	BEST BUY CO INC	443142	LT	x	x
BCR	BARD (C.R.) INC	339112	LT	x	x
BDX	BECTON DICKINSON & CO	339112	LT	x	x
BEN	FRANKLIN RESOURCES INC	523920	LT	x	x
BF.B	BROWN FORMAN CORP	312140	LT	x	x
BHI	BAKER HUGHES INC	213111	LT	x	x
BIIB	BIOGEN INC	325414	HT	x	x
BK	BANK OF NEW YORK MELLON CORP	522110	LT	x	x
BLK	BLACKROCK INC	523920	LT	x	x
BLL	BALL CORP	332431	LT	x	x
BMY	BRISTOL-MYERS SQUIBB CO	325412	HT	x	x
BRCM	BROADCOM CORP	334413	HT	x	x
BRK.B	BERKSHIRE HATHAWAY	551112	LT	x	x

BSX	BOSTON SCIENTIFIC CORP	334510	HT	x	x
BWA	BORGWARNER INC	336310	LT	x	x
BXP	BOSTON PROPERTIES INC	531120	LT	x	x
C	CITIGROUP INC	522291	LT	x	x
CA	CA INC	511210	HT	x	x
CAG	CONAGRA FOODS INC	311999	LT	x	x
CAH	CARDINAL HEALTH INC	424210	LT	x	x
CAT	CATERPILLAR INC	333120	HT	x	x
CBG	CBRE GROUP INC	531210	LT	x	x
CBS	CBS CORP	515120	LT	x	x
CCE	COCA-COLA EUROPEAN PARTNERS	312111	LT	x	x
CCI	CROWN CASTLE INTL CORP	531120	LT		x
CCL	CARNIVAL CORP/PLC (USA)	483112	LT	x	x
CELG	CELGENE CORP	325412	HT	x	x
CERN	CERNER CORP	541512	HT	x	x
CF	CF INDUSTRIES HOLDINGS INC	325311	HT	x	x
CHK	CHESAPEAKE ENERGY CORP	211111	HT	x	x
CHRW	C H ROBINSON WORLDWIDE INC	488510	LT	x	x
CI	CIGNA CORP	524114	LT	x	x
CINF	CINCINNATI FINANCIAL CORP	524126	LT	x	x
CL	COLGATE-PALMOLIVE CO	325620	HT	x	x
CLX	CLOROX CO/DE	325612	LT	x	x
CMA	COMERICA INC	522110	LT	x	x
CMCSA	COMCAST CORP	515210	LT		x
CME	CME GROUP INC	523210	LT	x	x
CMG	CHIPOTLE MEXICAN GRILL INC	722513	LT	x	x
CMI	CUMMINS INC	333618	LT		x
CMS	CMS ENERGY CORP	221118	LT	x	x
CNP	CENTERPOINT ENERGY INC	221118	LT	x	x
CNX	CONSOL ENERGY INC	212112	LT		x
COF	CAPITAL ONE FINANCIAL CORP	522210	LT	x	x
COG	CABOT OIL & GAS CORP	211111	HT	x	x
COH	COACH INC	316992	LT		x

COL	ROCKWELL COLLINS INC	336413	HT	x	x
COP	CONOCOPHILLIPS	211111	HT	x	x
COST	COSTCO WHOLESALE CORP	452910	LT	x	x
CPB	CAMPBELL SOUP CO	311422	LT	x	x
CRM	SALESFORCE.COM INC	511210	HT	x	x
CSC	COMPUTER SCIENCES CORP	541512	HT	x	x
CSCO	CISCO SYSTEMS INC	334210	HT	x	x
CSX	CSX CORP	482111	LT	x	x
CTAS	CINTAS CORP	315220	LT		x
CTSH	COGNIZANT TECH SOLUTIONS	541512	HT	x	x
CTXS	CITRIX SYSTEMS INC	511210	HT	x	x
CVC	CABLEVISION SYS CORP -CL A	515210	LT		x
CVS	CVS HEALTH CORP	446110	LT	x	x
CVX	CHEVRON CORP	324110	HT	x	x
D	DOMINION RESOURCES INC	221118	LT	x	x
DD	DU PONT (E I) DE NEMOURS	325320	HT		x
DE	DEERE & CO	333111	LT	x	x
DFS	DISCOVER FINANCIAL SVCS INC	522210	LT	x	x
DG	DOLLAR GENERAL CORP	452990	LT	x	x
DHI	D R HORTON INC	236117	LT	x	x
DIS	DISNEY (WALT) CO	515120	LT	x	x
DISCA	DISCOVERY COMMUNICATIONS INC	515210	LT	x	x
DLTR	DOLLAR TREE INC	452990	LT	x	x
DNB	DUN & BRADSTREET CORP	561450	LT	x	x
DO	DIAMOND OFFSHRE DRILLING INC	213111	LT	x	x
DOV	DOVER CORP	333415	LT	x	x
DOW	DOW CHEMICAL	325211	HT	x	x
DPS	DR PEPPER SNAPPLE GROUP INC	312111	LT	x	x
DRI	DARDEN RESTAURANTS INC	722511	LT	x	x
DTE	DTE ENERGY CO	238220	LT		x
DTV	DIRECTV	515210	LT	x	x
DUK	DUKE ENERGY CORP	221118	LT		x
DVN	DEVON ENERGY CORP	211111	HT	x	x

EA	ELECTRONIC ARTS INC	511210	HT	x	x
EBAY	EBAY INC	519130	HT		x
ECL	ECOLAB INC	325612	LT	x	x
ED	CONSOLIDATED EDISON INC	221118	LT	x	x
EFX	EQUIFAX INC	561450	LT	x	x
EIX	EDISON INTERNATIONAL	221118	LT	x	x
EMC	EMC CORP/MA	334112	HT		x
EMN	EASTMAN CHEMICAL CO	325211	HT	x	x
EOG	EOG RESOURCES INC	211111	HT	x	x
EQR	EQUITY RESIDENTIAL	531110	LT		x
ES	EVERSOURCE ENERGY	221118	LT	x	x
ESRX	EXPRESS SCRIPTS HOLDING CO	446110	LT		x
ESV	ENSCO PLC	213111	LT	x	x
ETFC	E TRADE FINANCIAL CORP	523120	LT	x	x
ETN	EATON CORP PLC	335314	LT	x	x
ETR	ENTERGY CORP	221118	LT		x
EW	EDWARDS LIFESCIENCES CORP	339113	LT	x	x
EXC	EXELON CORP	221118	LT	x	x
EXPD	EXPEDITORS INTL WASH INC	488510	LT	x	x
EXPE	EXPEDIA INC	561510	LT		x
F	FORD MOTOR CO	336390	HT	x	x
FAST	FASTENAL CO	444130	LT	x	x
FCX	FREEPORT-MCMORAN INC	212234	LT	x	x
FDO	FAMILY DOLLAR STORES	452990	LT	x	x
FDX	FEDEX CORP	492110	LT	x	x
FE	FIRSTENERGY CORP	221118	LT		x
FFIV	F5 NETWORKS INC	541512	HT	x	x
FIS	FIDELITY NATIONAL INFO SVCS	518210	HT	x	x
FISV	FISERV INC	518210	HT	x	x
FITB	FIFTH THIRD BANCORP	522110	LT	x	x
FLIR	FLIR SYSTEMS INC	334511	HT		x
FLR	FLUOR CORP	237990	LT	x	x
FLS	FLOWSERVE CORP	333911	LT	x	x

FMC	FMC CORP	325320	HT	x	x
FSLR	FIRST SOLAR INC	334413	HT	x	x
FTI	FMC TECHNOLOGIES INC	333132	HT		x
FTR	FRONTIER COMMUNICATIONS CORP	517110	LT		x
GAS	AGL RESOURCES INC	221210	LT	x	x
GCI	GANNETT CO INC	511110	LT	x	x
GD	GENERAL DYNAMICS CORP	336411	HT	x	x
GE	GENERAL ELECTRIC CO	238990	HT	x	x
GILD	GILEAD SCIENCES INC	325414	HT	x	x
GIS	GENERAL MILLS INC	311230	LT	x	x
GMCR	KEURIG GREEN MOUNTAIN INC	311920	LT	x	x
GME	GAMESTOP CORP	443142	LT	x	x
GNW	GENWORTH FINANCIAL INC	524113	LT	x	x
GPC	GENUINE PARTS CO	423120	LT	x	x
GPS	GAP INC	448140	LT	x	x
GRMN	GARMIN LTD	334511	HT	x	x
GS	GOLDMAN SACHS GROUP INC	523110	LT	x	x
GWW	GRAINGER (W W) INC	423840	LT	x	x
HAL	HALLIBURTON CO	213112	LT	x	x
HAR	HARMAN INTERNATIONAL INDS	334310	HT	x	x
HAS	HASBRO INC	339930	LT	x	x
HBAN	HUNTINGTON BANCSHARES	522110	LT	x	x
HCBK	HUDSON CITY BANCORP INC	522120	LT		x
HD	HOME DEPOT INC	444110	LT	x	x
HES	HESS CORP	211111	HT	x	x
HIG	HARTFORD FINANCIAL SERVICES	524126	LT		x
HOG	HARLEY-DAVIDSON INC	336991	LT	x	x
HON	HONEYWELL INTERNATIONAL INC	334512	HT	x	x
HOT	STARWOOD HOTELS&RESORTS WRLD	721110	LT	x	x
HP	HELMERICH & PAYNE	213111	LT		x
HPQ	HP INC	334111	HT	x	x
HRB	BLOCK H & R INC	541213	HT	x	x
HRL	HORMEL FOODS CORP	311611	LT	x	x

HRS	HARRIS CORP	518210	HT	x	x
HSP	HOSPIRA INC	325412	HT	x	x
HSY	HERSHEY CO	311351	LT	x	x
IBM	INTL BUSINESS MACHINES CORP	541519	HT	x	x
ICE	INTERCONTINENTAL EXCHANGE	523210	LT	x	x
IFF	INTL FLAVORS & FRAGRANCES	325199	HT	x	x
INTC	INTEL CORP	334413	HT	x	x
INTU	INTUIT INC	511210	HT		x
IP	INTL PAPER CO	322130	LT	x	x
IPG	INTERPUBLIC GROUP OF COS	541810	HT	x	x
IR	INGERSOLL-RAND PLC	333912	LT	x	x
IRM	IRON MOUNTAIN INC	531120	LT	x	x
ISRG	INTUITIVE SURGICAL INC	334510	HT		x
ITW	ILLINOIS TOOL WORKS	339999	LT	x	x
IVZ	INVESCO LTD	523920	LT	x	x
JCI	JOHNSON CONTROLS INTL PLC	333415	LT		x
JNJ	JOHNSON & JOHNSON	325412	HT	x	x
JNPR	JUNIPER NETWORKS INC	334210	HT		x
JOY	JOY GLOBAL INC	333131	LT	x	x
JPM	JPMORGAN CHASE & CO	522110	LT	x	x
JWN	NORDSTROM INC	448140	LT	x	x
K	KELLOGG CO	311230	LT	x	x
KEY	KEYCORP	522110	LT	x	x
KHC	KRAFT HEINZ CO	311421	LT		x
KIM	KIMCO REALTY CORP	531120	LT	x	x
KLAC	KLA-TENCOR CORP	333314	HT	x	x
KMB	KIMBERLY-CLARK CORP	322121	LT		x
KMI	KINDER MORGAN INC	486210	LT	x	x
KMX	CARMAX INC	441120	LT	x	x
KO	COCA-COLA CO	312111	LT	x	x
KR	KROGER CO	445110	LT	x	x
KSS	KOHL'S CORP	452111	LT		x
L	LOEWS CORP	524126	LT	x	x

LB	L BRANDS INC	448120	LT	x	x
LEG	LEGGETT & PLATT INC	337910	LT	x	x
LEN	LENNAR CORP	236117	LT	x	x
LLL	L-3 COMMUNICATIONS HLDGS INC	334220	HT		x
LLTC	LINEAR TECHNOLOGY CORP	334413	HT	x	x
LLY	LILLY (ELI) & CO	325412	HT	x	x
LM	LEGG MASON INC	523920	LT	x	x
LMT	LOCKHEED MARTIN CORP	336414	HT	x	x
LNC	LINCOLN NATIONAL CORP	524113	LT	x	x
LOW	LOWE'S COMPANIES INC	444110	LT	x	x
LRCX	LAM RESEARCH CORP	333242	HT	x	x
LUK	LEUCADIA NATIONAL CORP	311611	LT	x	x
LUV	SOUTHWEST AIRLINES	481111	LT	x	x
LYB	LYONDELLBASELL INDUSTRIES NV	325220	HT	x	x
M	MACY'S INC	452111	LT	x	x
MA	MASTERCARD INC	522320	LT	x	x
MAR	MARRIOTT INTL INC	721110	LT	x	x
MAS	MASCO CORP	332913	LT	x	x
MAT	MATTEL INC	339930	LT	x	x
MCD	MCDONALD'S CORP	722513	LT	x	x
MCHP	MICROCHIP TECHNOLOGY INC	334413	HT		x
MCK	MCKESSON CORP	424210	LT	x	x
MCO	MOODY'S CORP	561450	LT	x	x
MDLZ	MONDELEZ INTERNATIONAL INC	311999	LT		x
MDT	MEDTRONIC PLC	334510	HT	x	x
MET	METLIFE INC	524113	LT	x	x
MJN	MEAD JOHNSON NUTRITION CO	311514	LT		x
MKC	MCCORMICK & CO INC	311942	LT	x	x
MMC	MARSH & MCLENNAN COS	524210	LT	x	x
MMM	3M CO	322220	LT	x	x
MNST	MONSTER BEVERAGE CORP	312111	LT	x	x
MO	MARATHON PETROLEUM CORP	312230	LT	x	x
MON	MONSANTO CO	115112	LT	x	x

MOS	MOSAIC CO	325312	HT	x	x
MPC	MARATHON PETROLEUM CORP	324110	HT	x	x
MRK	MERCK & CO	325412	HT	x	x
MRO	MARATHON OIL CORP	211111	HT	x	x
MS	MORGAN STANLEY	523110	LT	x	x
MSFT	MICROSOFT CORP	511210	HT	x	x
MSI	MOTOROLA SOLUTIONS INC	334220	HT	x	x
MTB	M & T BANK CORP	522110	LT	x	x
MU	MICRON TECHNOLOGY INC	334413	HT	x	x
MUR	MURPHY OIL CORP	211111	HT	x	x
MWV	MEADWESTVACO CORP	322130	LT	x	x
MYL	MYLAN NV	325412	HT		x
NBL	NOBLE ENERGY INC	211111	HT	x	x
NE	NOBLE CORP PLC	213111	LT	x	x
NEE	NEXTERA ENERGY INC	221118	LT	x	x
NEM	NEWMONT MINING CORP	212221	LT	x	x
NFLX	NETFLIX INC	532230	LT	x	x
NFX	NEWFIELD EXPLORATION CO	211111	HT	x	x
NI	NISOURCE INC	221210	LT	x	x
NKE	NIKE INC	316210	LT	x	x
NOC	NORTHROP GRUMMAN CORP	334511	HT	x	x
NOV	NATIONAL OILWELL VARCO INC	333132	LT		x
NRG	NRG ENERGY INC	221118	LT		x
NSC	NORFOLK SOUTHERN CORP	482111	LT	x	x
NTAP	NETAPP INC	334112	HT		x
NTRS	NORTHERN TRUST CORP	522110	LT	x	x
NUE	NUCOR CORP	331110	LT	x	x
NVDA	NVIDIA CORP	334413	HT	x	x
NWL	NEWELL BRANDS INC	326199	LT	x	x
OI	OWENS-ILLINOIS INC	327213	LT	x	x
OKE	ONEOK INC	221210	LT	x	x
ORCL	ORACLE CORP	511210	HT		x
ORLY	O'REILLY AUTOMOTIVE INC	441310	LT	x	x

OXY	OCCIDENTAL PETROLEUM CORP	211111	HT	x	x
PAYX	PAYCHEX INC	541214	HT	x	x
PBCT	PEOPLE'S UNITED FINL INC	522120	LT	x	x
PBI	PITNEY BOWES INC	333318	HT	x	x
PCAR	PACCAR INC	336120	LT	x	x
PCG	PG&E CORP	221122	LT	x	x
PCL	PLUM CREEK TIMBER CO INC	113310	LT	x	x
PCLN	PRICELINE GROUP INC	519130	HT	x	x
PDCO	PATTERSON COMPANIES INC	423450	LT	x	x
PEG	PUBLIC SERVICE ENTRP GRP INC	221118	LT	x	x
PEP	PEPSICO INC	311919	LT	x	x
PETM	PETSMART INC	453910	LT	x	x
PFE	PFIZER INC	325412	HT	x	x
PFG	PRINCIPAL FINANCIAL GRP INC	523920	LT	x	x
PG	PROCTER & GAMBLE CO	325611	HT	x	x
PGR	PROGRESSIVE CORP-OHIO	524126	LT	x	x
PH	PARKER-HANNIFIN CORP	332912	HT	x	x
PHM	PULTEGROUP INC	236117	LT	x	x
PKI	PERKINELMER INC	334516	HT	x	x
PLD	PROLOGIS INC	531120	LT	x	x
PLL	PALL CORP	333999	LT	x	x
PM	PHILIP MORRIS INTERNATIONAL	312230	LT	x	x
PNC	PNC FINANCIAL SVCS GROUP INC	522110	LT	x	x
PNR	PENTAIR PLC	333911	LT	x	x
PNW	PINNACLE WEST CAPITAL CORP	221118	LT	x	x
POM	PEPCO HOLDINGS INC	221118	LT	x	x
PPG	PPG INDUSTRIES INC	325510	LT	x	x
PPL	PPL CORP	221118	LT	x	x
PRGO	PERRIGO CO PLC	325412	HT	x	x
PRU	PRUDENTIAL FINANCIAL INC	524113	LT	x	x
PSA	PUBLIC STORAGE	531130	LT	x	x
PSX	PHILLIPS 66	324110	HT	x	x
PWR	QUANTA SERVICES INC	238210	LT	x	x

PX	PRAXAIR INC	325120	HT	x	x
PXD	PIONEER NATURAL RESOURCES CO	211111	HT	x	x
QCOM	QUALCOMM INC	334413	HT		x
QEP	QEP RESOURCES INC	211111	HT	x	x
R	RYDER SYSTEM INC	532120	LT	x	x
RAI	REYNOLDS AMERICAN INC	312230	LT	x	x
RF	REGIONS FINANCIAL CORP	522110	LT	x	x
RHI	ROBERT HALF INTL INC	561320	LT	x	x
RHT	RED HAT INC	511210	HT		x
RL	RALPH LAUREN CORP	315220	LT		x
ROP	ROPER TECHNOLOGIES INC	334513	HT	x	x
ROST	ROSS STORES INC	448140	LT	x	x
RRC	RANGE RESOURCES CORP	211111	HT	x	x
RSG	REPUBLIC SERVICES INC	562111	LT	x	x
RTN	RAYTHEON CO	334511	HT	x	x
SBUX	STARBUCKS CORP	722513	LT	x	x
SCG	SCANA CORP	221122	LT		x
SCHW	SCHWAB (CHARLES) CORP	523920	LT	x	x
SE	SPECTRA ENERGY CORP	221210	LT	x	x
SEE	SEALED AIR CORP	326112	LT	x	x
SHW	SHERWIN-WILLIAMS CO	325510	LT	x	x
SIAL	SIGMA-ALDRICH CORP	325411	HT	x	x
SJM	SMUCKER (JM) CO	311421	LT	x	x
SNA	SNAP-ON INC	332216	LT	x	x
SNDK	SANDISK CORP	334112	HT	x	x
SNI	SCRIPPS NETWORKS INTERACTIVE	515120	LT	x	x
SO	SOUTHERN CO	221122	LT	x	x
SPG	SIMON PROPERTY GROUP INC	531120	LT	x	x
SPLS	STAPLES INC	453210	LT	x	x
SRCL	STERICYCLE INC	562211	LT	x	x
SRE	SEMPRA ENERGY	221210	LT	x	x
STI	SUNTRUST BANKS INC	522110	LT	x	x
STJ	ST JUDE MEDICAL INC	334510	HT	x	x

STX	SEAGATE TECHNOLOGY PLC	334112	HT		x
STZ	CONSTELLATION BRANDS	312130	LT	x	x
SWK	STANLEY BLACK & DECKER INC	333991	HT	x	x
SWN	SOUTHWESTERN ENERGY CO	211111	HT	x	x
SYK	STRYKER CORP	339113	LT	x	x
SYMC	SYMANTEC CORP	511210	HT	x	x
SYY	SYSCO CORP	424420	LT	x	x
T	AT&T INC	517210	HT	x	x
TAP	MOLSON COORS BREWING CO	312120	LT		x
TDC	TERADATA CORP	541511	HT		x
TE	TECO ENERGY INC	221112	LT	x	x
TEL	TE CONNECTIVITY LTD	334417	HT	x	x
TGT	TARGET CORP	452990	LT	x	x
THC	TENET HEALTHCARE CORP	622110	LT	x	x
TIF	TIFFANY & CO	448310	LT	x	x
TJX	TJX COMPANIES INC	448140	LT	x	x
TMK	TORCHMARK CORP	524113	LT	x	x
TMO	THERMO FISHER SCIENTIFIC INC	334516	HT	x	x
TRIP	TRIPADVISOR INC	519130	HT	x	x
TROW	PRICE (T. ROWE) GROUP	523930	LT	x	x
TRV	TRAVELERS COS INC	524126	LT	x	x
TSN	TYSON FOODS INC-CL A	311611	LT		x
TSO	TESORO CORP	324110	HT		x
TSS	TOTAL SYSTEM SERVICES INC	522320	LT	x	x
TWC	TIME WARNER CABLE INC	515210	LT	x	x
TWX	TIME WARNER INC	512110	LT	x	x
TXN	TEXAS INSTRUMENTS INC	334413	HT	x	x
TXT	TEXTRON INC	336411	HT	x	x
TYC	TYCO INTERNATIONAL PLC	334290	HT	x	x
UNH	UNITEDHEALTH GROUP INC	524114	LT	x	x
UNM	UNUM GROUP	524114	LT	x	x
UNP	UNION PACIFIC CORP	482111	LT		x
UPS	UNITED PARCEL SERVICE INC	492110	LT	x	x

URBN	URBAN OUTFITTERS INC	448140	LT		x
USB	U S BANCORP	522110	LT	x	x
UTX	UNITED TECHNOLOGIES CORP	336412	HT	x	x
V	VISA INC	522320	LT	x	x
VAR	VARIAN MEDICAL SYSTEMS INC	334510	HT	x	x
VFC	VF CORP	315220	LT	x	x
VIAB	VIACOM INC	515120	LT	x	x
VLO	VALERO ENERGY CORP	324110	HT	x	x
VMC	VULCAN MATERIALS CO	212319	LT	x	x
VNO	VORNADO REALTY TRUST	531120	LT	x	x
VRSN	VERISIGN INC	519130	HT	x	x
VZ	VERIZON COMMUNICATIONS INC	517210	HT	x	x
WAT	WATERS CORP	334516	HT	x	x
WBA	WALGREENS BOOTS ALLIANCE INC	446110	LT	x	x
WDC	WESTERN DIGITAL CORP	334112	HT	x	x
WEC	WEC ENERGY GROUP INC	221112	LT	x	x
WFC	WELLS FARGO & CO	522110	LT	x	x
WFM	WHOLE FOODS MARKET INC	445110	LT	x	x
WHR	WHIRLPOOL CORP	335228	LT	x	x
WIN	WINDSTREAM HOLDINGS INC	517110	LT	x	x
WM	WASTE MANAGEMENT INC	562111	LT	x	x
WMB	WILLIAMS COS INC	486210	LT	x	x
WMT	WAL-MART STORES INC	452990	LT	x	x
WU	WESTERN UNION CO	522320	LT	x	x
WY	WEYERHAEUSER CO	321912	LT	x	x
WYN	WYNDHAM WORLDWIDE CORP	531390	LT		x
WYNN	WYNN RESORTS LTD	721120	LT	x	x
XEL	XCEL ENERGY INC	221118	LT	x	x
XL	XL GROUP LTD	524126	LT	x	x
XLNX	XILINX INC	334413	HT		x
XOM	EXXON MOBIL CORP	324110	HT	x	x
XRX	XEROX CORP	518210	HT	x	x
XYL	XYLEM INC	333911	LT	x	x

YHOO	YAHOO INC	519130	HT	x	x
YUM	YUM BRANDS INC	722513	LT	x	x
ZBH	ZIMMER BIOMET HOLDINGS INC	339113	LT	x	x
ZION	ZIONS BANCORPORATION	522110	LT	x	x

Appendix 3: Data Collection: CATA Final Word List per Industry Condition

Further insights on the CATA approach for measuring industry turbulence and munificence: The comprised but uncategorised list of all words (56 in total) was sent to three strategy and marketing scholars with the request of mapping each word to one of the industry conditions. No further instructions were provided, other than the option to classify each of the words as being related to either “Munificence”, “Turbulence”, or “Unclear” and the here used definitions of both terms.

As a first result, an agreement rate of 64.3% was reported (at least two of three respondents categorised the specific industry conditions correctly). This number represents an agreement index of 14 out of 22 munificence and 22 out of 34 turbulence related words. No initial agreement on 8 munificence and 12 turbulence related words, 20 words in total, was accomplished. For those words where an agreement was ultimately reached, no further verifications were performed as certain reliability of these classifications from the two respondents was assumed to be satisfactory. For the words in which the initial non-agreement was apparent, a discussion with all respondents was arranged to arrive at a negotiated conclusion to understand which opposing classification was accurate and whether a further agreement could be reached. The intention was to ensure that no word was wrongly classified (neither by the CATA analysis nor the respondents) and to increase, as far as possible and legitimate, the number of words to be included in further analyses. Moreover, this dialogue helped to verify the classifications bearing non-agreement according to the research aims and criteria and to check for accuracy.

After discussing the 20 open words from the database with the respondents, the following was reported: As an overall non-agreement, 18 words were reported. This number was mainly caused by the ambiguity of words or due to their meaning relating to the other constructs as well. Words without agreement were set aside from observations after that step. Thus, the final list comprises 38 out of 56 words; with an agreement rate of 67.9%. As a result, two validated lists with frequent words that are commonly related to both industry conditions of munificence and turbulence were received:

Words to categorise	Category ("M" munificence, "T" turbulence, or "U" unclear)	Respondent 1	Respondent 2	Respondent 3	Agreement requirements fulfilled?
absence	T	U	U	U	x
buffer	T	U	T	T	x
capacity	M	U	M	M	x
change	T	T	T	T	x
changes	T	T	T	T	x
coalitions	M	U	M	T	
collusion	T	U	T	T	x
consequences	T	U	U	T	
contended	T	U	T	T	x
contingency	M	U	M	M	x
cope	T	U	T	M	
cycle	M	U	M	M	x
dealing	T	U	U	U	
dealt	T	U	M	U	
debt	M	U	M	T	
degree	T	U	T	U	
demand	M	M	M	M	x
dependent	T	U	T	U	
difficult	T	U	U	U	
difficulty	T	U	T	T	x
dynamism	T	T	T	T	x
experiencing	T	U	T	T	x
growth	M	M	M	M	x
hard	T	U	T	U	
instability	T	T	T	T	x
institutional	M	U	M	U	

intensiveness	M	U	U	U	x
interconnectedness	T	U	T	M	
interconnection	T	U	T	M	
interindustry	M	U	M	U	
intraindustry	M	U	M	U	
modification	T	U	T	T	x
munificence	M	M	M	M	x
munificent	M	M	M	M	x
policy	T	U	T	T	x
profit	M	U	M	M	x
resources	M	U	M	M	x
restricted	T	U	T	T	x
slack	M	U	M	M	x
stability	M	U	M	M	x
stability-instability	T	T	T	T	x
stress	T	U	T	M	
sustain	M	U	M	M	x
sustained	M	U	M	M	x
turbulence	T	T	T	T	x
unanticipated	T	T	T	T	x
uncertain	T	T	T	T	x
uncertainty	T	T	T	T	x
unpredictability	T	T	T	T	x
unpredictable	T	T	T	T	x
unstable	T	T	T	T	x
unsystematic	T	U	T	T	x
variable	T	U	T	T	x
variance	M	U	M	T	
variation	M	U	M	T	
viability	M	U	M	M	x

Appendix 4: Data Validity: Subject Matter Expert Word Categorisation Instructions

Instructions

As a subject matter expert in the area of entrepreneurial orientation (EO), I am asking for your help in creating a list of words that relate to the five classic EO dimensions of innovativeness, risk-taking, proactiveness, autonomy, and competitive aggressiveness. Definitions for each of these dimensions are listed below. Once you have reviewed those definitions, please make a determination of which dimension (if any) relates to the words on the list. More specifically, please consider the following.

(A) Review each word listed in the second tab highlighted "categorisation", and enter your decisions on the dimension that you think it best fits in column B.

(B) Each word should be mapped to only one category/dimension; if unsure or you believe the word is ambiguous, please enter "U" for unclear.

(C) The list is fairly long, but categorisation should go quickly once you have done a few. However, it is fine to pace yourself, they need not all be done at once.

General Understanding of the five EO multi-dimensions

Innovativeness

From a business perspective, there are several reasons for an organisation to behave in an entrepreneurial and innovative manner, as any firm is required to balance its own priorities within industry-specific settings. Organisations that are not innovative may secede market share to competitors, lose well-educated staff, or may continue to operate uneconomically (Wales, 2016).

Risk-Taking

Any firm may face either individual or firm-level risks at a certain point in time when its management – if implemented and executed optimally – can limit their potentially caused losses (Banks & Dunn, 2004).

Proactiveness

Concerning EO, senior managers tend to act entrepreneurially as they are required to secure a firm's growth through the implementation of visions (Penrose 1959). In this regard, Lieberman and Montgomery (1988) suggest the first mover advantage, and, therefore, proactiveness, that may generate above-average profits and brand recognition.

Autonomy

Within the last few decades of EO research, it has been noted that independently thinking (autonomous) top-level employees are more likely to establish useful business ideas within the firm (Chesbrough, 2006).

Competitive Aggressiveness

Established firms behaving in an entrepreneurial manner are more likely to persist in the market than their industry start-up counterparts (Covin & Miles, 1999). Researchers have assumed the importance of competitiveness towards a firm's ability to sustain and secure long-term organisational success (such as MacMillan, 1982; Porter, 1985).

Appendix 5: Data Validity: CATA Final Word List per EO Multi-Dimension

Words to categorise	**Category ("I" Innovativeness, "R" Risk-Taking, "P" Proactiveness, "A" Autonomy, "C" Competitive Aggressiveness, or "U" unclear)**	**Respondent 1**	**Respondent 2**	**Respondent 3**	**Agreement requirements fulfilled?**
at-liberty,	A	U	A	A	x
authority,	A	U	A	A	x
authorization,	A	U	A	A	x
autonomic,	A	U	A	A	x
autonomous,	A	A	A	A	x
autonomy,	A	A	A	A	x
decontrol,	A	U	R	A	
deregulation,	A	U	A	A	x
distinct,	A	U	U	A	x
do-it-yourself,	A	A	U	A	x
emancipation,	A	U	U	A	x
flexibility,	A	P	I	A	
free,	A	A	A	A	x
freedom,	A	A	A	A	x
freethinking,	A	A	A	A	x
independence,	A	A	A	A	x
independent,	A	A	A	A	x
independently,	A	A	A	A	x
individual,	A	U	U	U	
liberty,	A	U	U	A	x
license,	A	U	U	A	x
on-one’s-own,	A	U	A	A	x
outside,	A	U	U	A	x
prerogative,	A	U	U	A	x
self-directed,	A	A	A	U	x
self-directing,	A	A	A	U	x
self-direction,	A	A	A	U	x

self-rule,	A	A	A	A	x
self-ruling,	A	A	A	A	x
separate,	A	U	U	U	
sovereign,	A	U	A	A	x
sovereignty,	A	U	A	U	x
unaffiliated,	A	A	U	U	x
unattached,	A	A	A	U	x
unconfined,	A	A	U	A	x
unconnected,	A	U	U	A	x
unfettered,	A	U	U	U	
unforced,	A	U	A	U	x
ungoverned,	A	A	U	A	x
unregulated,	A	U	R	A	
achievement,	C	C	C	C	x
aggressive,	C	C	C	C	x
aggressively,	C	C	C	C	x
aggressiveness,	C	C	C	C	x
ambitious,	C	P	C	C	x
antagonist,	C	C	C	C	x
antagonistic,	C	C	C	C	x
aspirant,	C	I	C	C	x
battle,	C	C	C	C	x
battler,	C	C	C	C	x
capitalize,	C	U	U	C	x
challenge,	C	U	C	C	x
challenger,	C	C	C	C	x
combat,	C	C	C	C	x
combative,	C	C	C	C	x
compete,	C	C	C	C	x
competer,	C	U	C	C	x
competing,	C	U	C	C	x
competition,	C	U	C	C	x
competitive,	C	U	C	C	x

competitor,	C	U	C	C	x
competitors,	C	U	C	C	x
competitory,	C	U	C	C	x
conflicting,	C	R	C	C	x
contend,	C	A	C	C	x
contender,	C	U	C	C	x
contentious,	C	U	C	C	x
contest,	C	C	C	C	x
contestant,	C	U	C	C	x
cutthroat,	C	C	U	C	x
defend,	C	C	R	C	
dog-eat-dog,	C	C	U	C	x
enemy,	C	C	C	C	x
engage,	C	P	C	C	x
entrant,	C	U	C	C	x
exploit,	C	U	C	C	x
fierce,	C	C	C	C	x
fight,	C	C	C	C	x
fighter,	C	C	C	C	x
foe,	C	C	C	C	x
intense,	C	U	C	C	x
intensified,	C	C	C	C	x
intensive,	C	U	C	C	x
jockey-for-position,	C	C	C	C	x
joust,	C	C	U	C	x
jouster,	C	U	U	C	x
lock-horns,	C	U	U	C	x
opponent,	C	C	C	C	x
oppose,	C	U	C	C	x
opposed,	C	U	U	C	x
opposing,	C	U	U	C	x
opposition,	C	C	U	C	x
outperform,	C	U	C	C	x

play-against,	C	U	C	U	x
ready-to-fight,	C	C	C	C	x
rival,	C	C	C	C	x
rivals,	C	C	C	C	x
spar,	C	C	U	C	x
strive,	C	U	C	C	x
striving,	C	U	C	C	x
struggle,	C	U	C	C	x
tactics,	C	C	U	C	x
tussle,	C	C	U	C	x
undermine,	C	U	U	C	x
vying,	C	U	U	C	x
weaknesses,	C	U	C	C	x
wrestle,	C	U	C	C	x
activities,	I	U	U	I	x
ad-lib,	I	A	U	I	
adroit,	I	U	U	I	x
adroitness,	I	U	U	I	x
advertising,	I	U	U	U	x
bright-idea,	I	I	I	I	x
change,	I	P	I	I	x
changes,	I	P	I	I	x
clever,	I	U	I	I	x
cleverness,	I	U	I	I	x
conceive,	I	I	U	I	x
concoct,	I	I	U	I	x
concoction,	I	U	U	I	x
concoctive,	I	U	U	I	x
conjure-up,	I	U	U	I	x
create,	I	I	I	I	x
creation,	I	U	I	I	x
creative,	I	A	I	I	x
creativity,	I	A	I	I	x

creator,	I	A	I	I	x
development,	I	I	I	I	x
discover,	I	I	I	I	x
discoverer,	I	U	I	I	x
discovery,	I	I	I	I	x
dream,	I	I	I	I	x
dream-up,	I	I	I	I	x
emphasis,	I	U	U	I	x
envisage,	I	P	I	I	x
envision,	I	P	I	I	x
experimentation,	I	I	R	I	x
expert,	I	A	I	I	
form,	I	U	U	I	x
formulation,	I	P	U	I	
frame,	I	U	U	I	x
framer,	I	U	U	I	x
freethinker,	I	A	A	I	
genesis,	I	U	U	I	x
genius,	I	U	I	I	x
gifted,	I	U	I	I	x
hit-upon,	I	U	U	I	x
imagination,	I	I	I	I	x
imaginative,	I	I	I	I	x
imagine,	I	I	I	I	x
improvise,	I	R	I	I	
ingenious,	I	I	I	I	x
ingenuity,	I	I	U	I	x
initiative,	I	A	A	I	
initiator,	I	A	A	I	
innovate,	I	I	I	I	x
innovation,	I	I	I	I	x
innovations,	I	I	I	I	x
innovative,	I	I	I	I	x

innovativeness,	I	I	I	I	x
inspiration,	I	U	U	I	x
inspired,	I	U	I	I	x
invent,	I	I	I	I	x
invented,	I	I	I	I	x
invention,	I	I	I	U	x
inventive,	I	I	U	I	x
inventiveness,	I	I	U	I	x
inventor,	I	I	I	U	x
learning,	I	P	I	I	x
make-up,	I	U	U	I	x
mastermind,	I	A	I	I	x
master-stroke,	I	U	C	I	
metamorphose,	I	U	I	I	x
metamorphosis,	I	U	I	I	x
neoteric,	I	U	U	I	x
neoterism,	I	U	U	I	x
neoterize,	I	U	U	I	x
new,	I	I	I	I	x
new-wrinkle,	I	U	I	I	x
novel,	I	I	I	I	x
novelty,	I	I	I	I	x
original,	I	I	I	I	x
originality,	I	I	I	I	x
originate,	I	U	I	I	x
origination,	I	U	I	I	x
originative,	I	U	I	I	x
originator,	I	U	U	I	x
patent,	I	I	I	I	x
product-market,	I	P	U	I	
radical,	I	I	I	I	x
recast,	I	U	U	I	x
recasting,	I	U	U	I	x

resourceful,	I	A	I	I	x
resourcefulness,	I	A	I	I	x
restyle,	I	U	I	I	x
restyling,	I	U	I	I	x
revolutionize,	I	I	I	I	x
seethings,	I	U	U	I	x
solutions,	I	I	I	I	x
technological,	I	I	I	I	x
technologies,	I	I	I	I	x
think-up,	I	U	I	U	x
trademark,	I	U	I	I	x
vision,	I	U	U	I	x
visionary,	I	U	I	I	x
visualize,	I	P	U	i	
willingness,	I	U	U	I	x
advance,	P	I	P	P	x
ahead,	P	U	P	P	x
anticipate,	P	P	P	P	x
anticipating,	P	P	P	P	x
better,	P	R	C	I	
environment,	P	U	U	P	x
expect,	P	U	U	P	x
exploiting,	P	U	C	P	
exploration,	P	I	R	P	
exploratory,	P	I	R	P	
explore,	P	I	R	P	
first-mover,	P	P	P	P	x
forecast,	P	P	U	P	x
foreglimpse,	P	U	U	P	x
foreknow,	P	U	U	P	x
foresee,	P	P	U	P	x
foretell,	P	U	U	P	x
forward-looking,	P	P	P	P	x

future,	P	P	I	P	x
ideas,	P	I	I	P	
inquire,	P	P	U	P	x
inquiry,	P	P	U	P	x
investigate,	P	P	I	P	x
investigation,	P	P	U	P	x
look-into,	P	U	I	P	
needs,	P	P	U	P	x
opportunities,	P	P	C	P	x
opportunity-seeking,	P	P	C	P	x
perspective,	P	U	U	P	x
proactive,	P	P	P	P	x
proactively,	P	P	P	P	x
proactiveness,	P	P	P	P	x
probe,	P	P	U	P	x
propensity,	P	U	U	P	x
prospect,	P	U	U	P	x
reactiveness,	P	U	P	P	x
research,	P	I	I	P	
respond,	P	U	C	P	
responsive,	P	U	C	P	
scrutinization,	P	U	U	P	x
scrutiny,	P	U	U	P	x
search,	P	P	I	P	x
study,	P	U	I	P	
survey,	P	U	U	P	x
adventuresome,	R	P	P	R	
adventurous,	R	P	P	R	
audacious,	R	U	U	R	x
aversion,	R	U	U	R	x
bet,	R	R	C	R	x
bold,	R	P	R	R	x
bold-spirited,	R	P	R	R	x

brash,	R	U	U	R	x
brave,	R	U	R	R	x
chance,	R	R	R	R	x
chancy,	R	U	U	R	x
courageous,	R	U	R	R	x
danger,	R	U	R	R	x
dangerous,	R	U	R	R	x
dare,	R	R	R	R	x
daredevil,	R	U	R	R	x
daring,	R	R	R	R	x
dauntless,	R	U	R	R	x
dicey,	R	U	U	R	x
enterprising,	R	P	R	R	x
fearless,	R	R	R	R	x
gamble,	R	R	R	R	x
gutsy,	R	U	U	R	x
headlong,	R	U	U	R	x
incautious,	R	R	R	R	x
intrepid,	R	U	U	R	x
investing,	R	U	I	R	
plunge,	R	U	U	R	x
precarious,	R	U	U	R	x
rash,	R	U	P	R	
reckless,	R	U	R	R	x
risk,	R	R	R	R	x
risks,	R	R	R	R	x
risk-taking,	R	R	R	R	x
risky,	R	R	R	R	x
stake,	R	U	R	R	x
temerity,	R	U	U	R	x
uncertain,	R	U	R	R	x
uncertainty,	R	R	R	R	x
venture,	R	U	R	R	x

venturesome,	R	U	R	R	x
wager,	R	U	U	R	x

Appendix 6: Analysis and Results: Ideal Profiles: Ranking Option (i)

Composite Ranking Score

A first option was to rank each firm separately on each of the four performance indicators (from "1" to "147" for HT firms and "1" to "280" for LT firms) to then create a composite ranking over all performance measures. Where variables of performance measures had the same value for two or more firms (based on two-digit decimal values), they were ranked in the same position. Next, for each firm, the individual performance indicator rankings were totalled across the four performance measures to create a single composite ranking score per firm (single composite ranking score per firm = ranking score V1 + ranking score V2 + ranking score V3 + ranking score V4). For example, this resulted in ranking Apple Inc. as the best performer within the HT space with a composite ranking score of 99, while Qep Resources Inc. was ranked as a lowest performer (score of 502) within the same industry type.

As seen within the following table (including their composite ranking scores), for the 147 HT firms, there are 7 companies each in the top/poorest 5% and 15 companies in the top/poorest 10% of performers. For the 280 LT firms, there are 14 companies each in the top/poorest 5% and 28 companies in the top/poorest 10% performers (this applies to rank option (ii) as well). The table lists the prospective high- and low-performing firms from each of the two samples, in order of their composite ranking scores (the higher within the list, the better a firm is performing). Ultimately, the other ranking option of performance ranking scores was selected.

Ticker Symbol	Company Name	Composite Ranking Score (total ranking scores)	Highest (T5%/T10% or Poorest (P5%/P10%) Performers	Ticker Symbol	Company Name	Composite Ranking Score (total ranking scores)	Highest (T5%/T10% or Poorest (P5%/P10%) Performers
Low-Tech Firms				**High-Tech Firms**			
H	COACH INC	66	T5% + T10%	AAPL	APPLE INC	92	T5% + T10%
MCO	MOODY'S CORP	144	T5% + T10%	ABBV	ABBVIE INC	114	T5% + T10%
VFC	VF CORP	183	T5% + T10%	QCOM	QUALCOMM INC	122	T5% + T10%
BBBY	BED BATH & BEYOND INC	233	T5% + T10%	STX	SEAGATE TECHNOLOGY PLC	124	T5% + T10%
JOY	JOY GLOBAL INC	237	T5% + T10%	GILD	GILEAD SCIENCES INC	140	T5% + T10%
DTV	DIRECTV	238	T5% + T10%	BIIB	BIOGEN INC	140	T5% + T10%
NKE	NIKE INC	241	T5% + T10%	AMGN	AMGEN INC	145	T5% + T10%
FAST	FASTENAL CO	244	T5% + T10%	PCLN	PRICELINE GROUP INC	147	T10%
ECL	ECOLAB INC	244	T5% + T10%	ISRG	INTUITIVE SURGICAL INC	151	T10%
KO	COCA-COLA CO	265	T5% + T10%	MSFT	MICROSOFT CORP	152	T10%
PM	PHILIP MORRIS INTERNATIONAL	266	T5% + T10%	EMC	EMC CORP/MA	167	T10%
BF.B	BROWN FORMAN CORP	268	T5% + T10%	CSCO	CISCO SYSTEMS INC	169	T10%
MA	MASTERCARD INC	273	T5% + T10%	WDC	WESTERN DIGITAL CORP	169	T10%
MJN	MEAD JOHNSON NUTRITION CO	277	T5% + T10%	ALXN	ALEXION PHARMACEUTICALS INC	172	T10%

MNST	MONSTER BEVERAGE CORP	290	T10%	TRIP	TRIPADVISOR INC	176	T10%
GMCR	KEURIG GREEN MOUNTAIN INC	291	T10%	DOW	DOW CHEMICAL	411	P10%
HSY	HERSHEY CO	292	T10%	HES	HESS CORP	413	P10%
SNI	SCRIPPS NETWORKS INTERACTIVE	293	T10%	IPG	INTERPUBLIC GROUP OF COS	424	P10%
SHW	SHERWIN-WILLIAMS CO	294	T10%	EA	ELECTRONIC ARTS INC	426	P10%
RL	RALPH LAUREN CORP	295	T10%	AMAT	APPLIED MATERIALS INC	426	P10%
UNP	UNION PACIFIC CORP	297	T10%	HSP	HOSPIRA INC	436	P10%
EXPE	EXPEDIA INC	299	T10%	GD	GENERAL DYNAMICS CORP	440	P10%
PETM	PETSMART INC	299	T10%	MU	MICRON TECHNOLOGY INC	444	P10%
EW	EDWARDS LIFESCIENCES CORP	305	T10%	LRCX	LAM RESEARCH CORP	446	P5% + P10%
AZO	AUTOZONE INC	308	T10%	CHK	CHESAPEAKE ENERGY CORP	448	P5% + P10%
NOV	NATIONAL OILWELL VARCO INC	313	T10%	HRS	HARRIS CORP	469	P5% + P10%
EFX	EQUIFAX INC	314	T10%	SWN	SOUTHWESTERN ENERGY CO	471	P5% + P10%
MKC	MCCORMICK & CO INC	314	T10%	DVN	DEVON ENERGY CORP	498	P5% + P10%
VNO	VORNADO REALTY TRUST	843	P10%	NFX	NEWFIELD EXPLORATION CO	498	P5% + P10%
MS	MORGAN STANLEY	844	P10%	QEP	QEP RESOURCES INC	502	P5% + P10%

XL	XL GROUP LTD	845	P10%
TE	TECO ENERGY INC	849	P10%
NI	NISOURCE INC	851	P10%
XEL	XCEL ENERGY INC	856	P10%
L	LOEWS CORP	860	P10%
ED	CONSOLIDATED EDISON INC	868	P10%
SCG	SCANA CORP	877	P10%
GME	GAMESTOP CORP	877	P10%
OKE	ONEOK INC	882	P10%
ETR	ENTERGY CORP	893	P10%
CMS	CMS ENERGY CORP	894	P10%
UNM	UNUM GROUP	898	P10%
AIZ	ASSURANT INC	899	P5% + P10%
D	DOMINION RESOURCES INC	900	P5% + P10%
THC	TENET HEALTHCARE CORP	901	P5% + P10%
MET	METLIFE INC	903	P5% + P10%

FE	FIRSTENERGY CORP	904	P5% + P10%
CNP	CENTERPOINT ENERGY INC	910	P5% + P10%
AIV	APARTMENT INVST & MGMT CO	910	P5% + P10%
ETFC	E TRADE FINANCIAL CORP	923	P5% + P10%
EIX	EDISON INTERNATIONAL	927	P5% + P10%
AEE	AMEREN CORP	971	P5% + P10%
NRG	NRG ENERGY INC	978	P5% + P10%
POM	PEPCO HOLDINGS INC	988	P5% + P10%
GNW	GENWORTH FINANCIAL INC	1005	P5% + P10%
LM	LEGG MASON INC	1015	P5% + P10%

[This page is intentionally left blank.]